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THE EFFICACY OF THE BEHAVIOURAL CHANGE INTERVENTIONS MODEL IN DETERMINING UNIVERSITY STUDENTS HIV/AIDS RISK REDUCTION BEHAVIOURS: A PILOT STUDY

by

Henry Madsen

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Science

in

Family Life Education

Department of Human Ecology

Edmonton, Alberta

Spring, 1996

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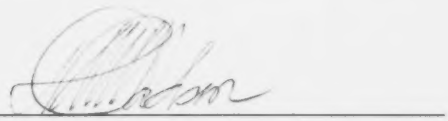

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled The Efficacy of the Behavioural Change Interventions Model in Determining University Students HIV/AIDS Risk Prevention Behaviours: A Pilot Study, submitted by Henry Madsen in partial fulfillment of the requirements for the degree of Master of Science in Family Life Education.

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Brenda Munro

John Mitchell

April 16, 1996

Date

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ABSTRACT

The Behavioural Change for Intervention model (BCI), developed by King and Wright (1993), represents a synthesis of extant behavioural change models with social psychology, social change and social marketing theories. This thesis tested the relationships between various categories of variables in the BCI model by administering a pilot questionnaire based on the BCI to 700 University of Alberta undergraduate students. Many of the variables presented within the BCI model proved to be salient predictors of sexual behaviours. Other variables did not predict sexual behaviour, or predicted sexual behaviour, but not in the path presented within the BCI. Results of the study suggest:

- BCI intervening variables of Behavioural Orientation act more as independent variables than as intervening variables; and
- there is support for operationalizing Environmental variables, and specifically Substance Use, as intervening variables.

A modification to the BCI is presented, based on results from this pilot study.

THE EFFICACY OF THE BEHAVIOURAL CHANGE INTERVENTIONS MODEL IN DETERMINING UNIVERSITY STUDENTS HIV/AIDS RISK REDUCTION BEHAVIOURS: A PILOT STUDY

I. INTRODUCTION..... 1

II. REVIEW OF THE LITERATURE..... 6

A. Extant Models..... 8

1. Individualistic Frameworks..... 8

a) Cognitive/Decision-Making Models..... 8

(1) Health Belief Model..... 11

(2) Theory of Reasoned Action..... 15

(3) Theory of Planned Behaviour..... 16

(4) Social Behaviour Theory..... 17

(5) Summary of Cognitive/Decision-Making Models..... 18

b) Learning Theories..... 20

(1) Social Learning Theory..... 20

(2) Theory of Perceived Self-Efficacy..... 22

(3) Summary of Learning Theories.... 23

c) Process of Change Models..... 24

(1) AIDS Risk Reduction Model..... 24

(2) Transtheoretical Stages of Change Model..... 26

d) Summary of Individualistic Models.... 28

2. Social-Psychological Models..... 29
(1) Information-Motivation-Behavioural Skills Model..... 31
3. Social Marketing Theories: Enabling Approaches..... 33
4. Summary and Implications of Extant Theories..... 35
B. Program Evaluations..... 36
III. THEORETICAL FRAMEWORK: THE BEHAVIOURAL CHANGE INTERVENTION MODEL..... 43
A. Model Components..... 44
1. Knowledge Acquisition..... 46
2. Skill Development..... 49
3. Personal Contexts..... 51
4. Social Contexts..... 53
5. Environmental Contexts..... 55
6. Relationship between influencing variables and behaviour: Behavioural Orientation... 56
a) Behavioural Intentions..... 58
b) Self-Efficacy..... 58
c) Sexuality Attitudes..... 59
B. Objectives of the Present Study..... 60
1. Objective 1..... 61
2. Objective 2..... 61

IV. METHODOLOGY OF THE STUDY..... 62

A. Study Sample..... 62

B. Data Collection..... 66

C. Instrument..... 66

1. Measures..... 67

2. Factor Analysis of the Measures..... 68

a) Dependent Variables..... 68

b) Independent Variables..... 70

(1) Knowledge..... 70

(2) Skills..... 71

(3) Personal Contexts..... 72

(4) Social Contexts..... 73

(5) Environment..... 74

c) Mediating Variables..... 74

3. Summary and Operationalization of the Measures..... 74

D. Data Analysis in Testing the Model Components.. 75

E. Limitations of the Study..... 76

V. RESULTS.....110

A. Tests of Objectives.....112

1. Independent Variables Regressed Against the Intervening Variables.....112

a) Independent variables regressed against Behavioural Orientation: Attitudes of Sexual Responsibility.....113

b) Independent variables regressed against Behavioural Orientation: Intentions..114

c) Independent variables regressed against Behavioural Orientation: Self-Efficacy..... 115

d) Summary of regressions against the intervening variable.....115

2. Independent Variables and Intervening Variables, Regressed Against the Dependent Variable.....117

a) All Independent Variables and Intentions, regressed against Sexual Behaviours.....117

b) All Independent Variables and Intentions, regressed against Condom Use.....118

c) All Independent Variables and Attitudes of Sexual Responsibility, regressed against Sexual Behaviours.....119

d) All Independent Variables and Attitudes of Sexual Responsibility regressed against Condom Use.....120

e) All Independent Variables and Self-Efficacy, regressed against Sexual Behaviours.....121

f) All Independent Variables and Self-Efficacy, regressed against Condom Use.....122

g) Summary of Regression Against the Dependent Variable.....123

VI. DISCUSSION.....142

A. Intervening Variables: Behavioural Orientation 142

1. Self-Efficacy.....143

2. Attitudes of Sexual Responsibility.....144

3. Intentions.....146

4. Summary of Behavioural Orientation.....149

B. Direct Relationships.....149

1. Environment.....149

a) Substance Use.....150

2. Skills.....152

a) Goal Orientation.....152

b) Interpersonal Assertiveness.....154

3. Social Contexts.....155

a) Parent Norms.....155

b) Peer Norms.....157

c) Perceptions of Peer Norms Regarding Condom Use.....158

4. Personal Contexts.....159

a) Peer Relationships.....159

C. Variables with No Effect.....160
1. Knowledge.....160
2. Personal Contexts.....163
a) Self-Esteem.....163
b) Perceptions of Risk.....164
D. Summary and Implications for Revisions to the BCI.....165
1. Variables with no direct effect: Foundations of Attitudes.....166
2. Independent Variables: Determinants of Sexual Behaviour.....167
3. The Intervening Variable: Environment.....169
E. Summary.....170
F. Implications for Intervention.....171
VII. CONCLUSION AND IMPLICATIONS FOR FUTURE RESEARCH.....179
VIII. BIBLIOGRAPHY.....184
IX. APPENDICES.....198
A. APPENDIX A: Items to test the BCI Model.....199
1. Keys.....214
B. APPENDIX B: Factor Loadings for items comprising components of the BCI as tested in this study..216
C. APPENDIX C: Correlation Coefficients.....222
D. APPENDIX D: Student Sexual Behaviour Survey...226

LIST OF TABLES

Table

4.1 Distribution of Participants by Gender.....79
4.2 Distribution of Participants by Year of University..... 79
4.3 Distribution of Participants by Previous Years Stanine.....79
4.4 Distribution of Participants by Religious Affiliation.....80
4.5 Distribution of Participants by Perceived Importance of Religion in Their Lives.....81
4.6 Distribution of Participants by Living Arrangement.....82
4.7 Distribution of Total Participants by Residence...83
4.8 Distribution of Participants by Sexual Attraction 84
4.9 Distribution of Female Participants by Residence and Frequency of Vaginal Sex.....85
4.10 Distribution of Male Participants by Residence and Frequency of Vaginal Sex.....86
4.11 Distribution of Female Participants by Residence and Number of Sexual Partners (Vaginal Sex).....87
4.12 Distribution of Male Participants by Residence and Number of Sexual Partners (Vaginal Sex).....88
4.13 Distribution of Participants by Number of University Level Sexuality Courses Taken.....89
4.14 Measures for Internal Consistency Scales.....90
4.15 Item Content for Dependent Variables.....92

4.16 Item Content for the Independent Variable: Knowledge 94
4.17 Item Content for the Independent Variable: Skills.....97
4.18 Item Content for Independent Variable: Personal Contexts..... 99
4.19 Item Content for Independent Variable: Social Contexts.....102
4.20 Item Content for the Independent Variable: Environment.....104
4.21 Item Content for the Mediating Variable: Behavioural Orientation.....104
4.22 Operationalization of the Variables.....107
5.1 Means and Standard Deviations for Variables and Indices Used.....126
5.2 Results of Stepwise Regression Analysis for All Independent Variables Regressed Against Behavioural Orientation: Intentions, for All Participants.....127
5.3 Results of Stepwise Regression Analysis for All Independent Variables Regressed Against Behavioural Orientation: Attitudes of Sexual Responsibility, for All Participants.....128
5.4 Results of Stepwise Regression Analysis for All Independent Variables Regressed Against Behavioural Orientation: Self Efficacy, for All Participants.....129
5.5 Results of Stepwise Regression Analysis for All Independent Variables and Intentions, Regressed Against Sexual Behaviors, for All Participants...130

5.6 Results of Stepwise Regression Analysis for All Independent Variables and Intentions, Regressed Against Condom Use, for All Participants.....131
5.7 Results of Stepwise Regression Analysis for All Independent Variables and Attitudes of Sexual Responsibility, Regressed Sexual Behaviors, for All Participants.....132
5.8 Results of Stepwise Regression Analysis for All Independent Variables and Attitudes of Sexual Responsibility, Regressed Condom Use, for All Participants.....133
5.9 Results of Stepwise Regression Analysis for all Independent Variables and Self Efficacy, Regressed Sexual Behaviors, for All Participants.....134
5.10 Results of Stepwise Regression Analysis for all Independent variables and Self Efficacy, Regressed Condom Use, for All Participants.....135

LIST OF FIGURES

Figure

3.1 Behavioural Change Interventions Model.....62
4.1 BCI As Tested In The Present Study.....78
5.1 Relationship of Independent Variables to Behavioural Intentions and Sexual Behaviours.....136
5.2 Relationship of Independent Variables to Behavioural Intentions and Condom Use.....137
5.3 Relationships of Independent Variables on Attitudes of Sexual Responsibility and Sexual Behaviours.....138
5.4 Relationship of Independent Variables on Attitudes of Sexual Responsibility and Condom Use.....139
5.5 Relationships of Independent Variables on Self-Efficacy and Sexual Behaviours.....140
5.6 Relationships of Independent Variables on Self-Efficacy and Condom Use.....141
6.1 Modified Behavioural Change Interventions Model.....178

INTRODUCTION

AIDS is a fatal disease that is a concern for society and especially for those of the younger generation. Nearly eighteen percent of the HIV/AIDS cases that were reported in Canada in December of 1995 were within the twenty to twenty-nine year old population (Health Canada, 1996). Considering the seven to ten year incubation period of AIDS, it is probable that most of these twenty to twenty-nine year olds first came into contact with HIV during their youth, between the ages of 15 and 24 (DiClemente, 1992). Representative of an age cohort within this population are university students who have been found to be sexually active. In a national survey by King and colleagues (1988), it was found that 71% of college/university students had experienced sexual intercourse at least once. This figure is consistent with surveys of similar university populations in other countries (Robertson, 1994; Grimley, Prochaska, Velicer & Prochaska, 1995; Raab et al., 1994). While reports of condom use in this population are equivocal and dependent on a variety of factors, it seems that only half of the students who are sexually active with multiple partners report consistent use of condoms as a form of protection (Grimley et al., 1995; Gerrard & Werner, 1994; Raab et

al., 1994; Robertson, 1995). Approximately one third of students sexually active with one partner report using condoms (Grimely et al., 1995). Because of their level of sexual activity, multiple partners and their lack of concern about potential morbidity or mortality, youth in university are particularly at risk of contracting HIV/AIDS (Raab et al., 1995).

In an attempt to eliminate the spread of HIV/AIDS infection, university students have been bombarded with much information on the infection from a variety of sources. The result has been a high level of knowledge, tolerant attitudes and healthier intended behaviours among Canadian youth (Brown, Barone, Fritz, Ceborllero & Nassay, 1991; Brown, Fritz & Barone, 1989; Doherty-Poirier & Munro, 1991; DiClemente, Pies, Stroller, Straits, Olivia, Haskin & Rutherford, 1989; Huszti, Clopton, & Mason, 1989; Jemmott, Jemmott & Fong, 1992; Lanier & MaCarthy, 1989; Rickert, Gottlieb & Jay, 1990; Robertson, 1995; Ruder, Flam, Flatto & Curran, 1990). While these results are indicators of the success of HIV/AIDS information dissemination, they do not present an accurate description of risk reduction behaviours. In order for HIV/AIDS education programs to be successful in reducing the spread of HIV/AIDS, they must be successful

in achieving consistent HIV/AIDS risk reduction behaviours. Prevention of HIV/AIDS can only be achieved when risk reduction knowledge is consistently practiced.

One of the major criticisms of previous research and prevention interventions for HIV/AIDS, is the apparent absence of a theoretical framework from which both research and practice may follow (Choi & Coates, 1994; Kirby et al., 1994). Although numerous theories have been proposed as frameworks for modifying risky behaviours, the majority have been based on individualistic, behavioural intervention models (Choi & Coates, 1994; Maticka-Tyndale, 1995). While these models are effective in explaining the formation of intention to act, they are incomplete as intervention models, lacking a link between intent and action, and neglecting salient contextual considerations necessary to effect long-term change (Maticka-Tyndale, 1995). In addition, the majority of the research and many of the HIV/AIDS interventions, lack theoretical basis. Those based in theory often lack methodologically sound evaluative research. Consequently, established reliability and validity of the data and of the effectiveness of the models/interventions is lacking (Choi & Coates, 1994; Oakley, Fullerton, & Holland, 1995).

The purpose of this thesis is to test a current model developed as a framework for both research and prevention in the area of HIV/AIDS risk reduction. This model, labeled the Behavioural Change for Intervention (BCI) was developed by King & Wright (1993). It is empirically and theoretically based and is to date, the most comprehensive HIV/AIDS behavioural change model found in the literature. The BCI represents a synthesis of extant behavioural change models with theories of social psychology, social change and social marketing. The information provided within the model therefore offers insights into behavioural change constructs including knowledge, skills, motivation and support as well as personal, social and environmental contexts. Through the application of the BCI it is proposed that understanding of determinants of risky versus healthy sexual behaviours will be enhanced. It is hoped that the model may provide a framework to guide the development of effective interventions resulting in the empowerment of individuals towards actual risk reduction behaviours.

This thesis will provide a comprehensive background to the development of the BCI, describe procedures used to test the model, and will make recommendations regarding the possible modifications to the BCI based on the study

results. Chapter two will first provide a critique of previous HIV/AIDS risk reduction and intervention research. Effective components and limitations of extant models and interventions will be discussed and a rationale for utilizing a current model based on recent literature will be presented. The BCI model will be described, and its components elaborated, in chapter three of the thesis. Chapter four will describe the methodology used in conducting the research of this thesis. Chapter five will present the results of the data analysis. Based on these results, support for and/or limitations of the BCI model will be presented. In chapter six, the discussion of the research, recommendations and modifications to the BCI will be presented based on the results of this study. A possible modification of the BCI will be presented. Finally chapter seven will provide suggestions for future research and for program implementation.

CHAPTER II:

REVIEW OF THE LITERATURE

By December 31 of 1995, the total number of AIDS cases reported in Canada had grown to 12,670. Over the past decade, from 1984 to 1994, the incidence of newly reported cases of AIDS per year increased from 154 cases to 1256. Unfortunately, these figures are considered to be low estimates. When under reporting and delays in reporting are taken into account, the estimated incidence of new cases of AIDS in the Canadian population in 1994 was 2289. Although the rates of incidence since 1991 appear to be leveling, the degree to which the disease is spreading amongst the Canadian population is frightening (Health Canada, 1996).

Of the reported cases of AIDS, almost 18% are found in the cohort of individuals aged 20 - 29 years. Forty-four and one half percent of the total cases fall into the 30 - 39 year age bracket. Since the incubation period of HIV into full blown AIDS is generally 6 to 10 years, it is likely that many of those living with AIDS contracted the virus as young adults. The young adult population is likely a high-risk group. Young adults have been shown to be the most sexually active group, and the most likely to engage in sexual encounters with more

than one partner (Choi & Coates, 1994; Raab et al., 1995). A particularly high risk group of individuals are university and college students. Survey evidence confirms that many students engage in behaviours that could place them at risk for HIV infection (Butcher, Manning, & O'Neal, 1991: Gerrard & Warner, 1994). Although knowledge of the consequences of unprotected sexual activity seems high, (Brown et al., 1991; Doherty-Poirier & Munro, 1991; Gerrard & Warner, 1995; Jemmott, Jemmott, & Fong, 1992; Wilson & Stewin, 1993), few young adults practice consistent risk-reduction behaviours (Fisher, 1988; Raab et al., 1995; Choi & Coates, 1994; Robertson, 1995). Clearly, interventions to alter unhealthy sexual practices in young adults, requires immediate and earnest efforts.

In this review of the literature, extant models of behavioural change for health-related behaviours will be discussed. Models that have been applied to HIV/AIDS research or interventions, with some attention given to generic models that have potential utility in the HIV/AIDS field will be the focus of the review. Components of models which have received empirical support for their effectiveness in interventions will be

highlighted. Similarly, limitations of models will be presented.

Extant Models

The overview of extant theories in the HIV/AIDS prevention literature will be divided into three groups as suggested by Matick-Tyndale (1995): a) individualistic cognitive and decision-making models; b) social-psychological frameworks; and c) social marketing approaches. Although some overlap can be noted, each group of models provides valuable components for inclusion into a unique comprehensive model of HIV/AIDS research and prevention.

Individualistic Frameworks

The most prominent approaches to research and intervention have focused on behaviour change at an individual level. The "intrapersonal models" (Maticka-Tyndale, 1995, p., 80) are based in the discipline of psychology and the behavioural sciences.

Cognitive and Decision Making Models

Both research and prevention strategies originally stemmed from knowledge-based models. The basic assumption of these models was that individuals would assimilate information given to them and then act on the

knowledge in a rational manner towards betterment of themselves. Although cognitive programs have been shown to be effective in increasing knowledge regarding HIV/AIDS and regarding the risks inherent in unprotected sexual activity, changes in behaviour towards risk reduction behaviours has been insignificant (Baldwin, Whiteley, & Baldwin, 1990; Brown, DiClemente & Beausoleil, 1992; Doherty-Poirier & Munro, 1991; Jacobs & Wolf, 1995; Aplasca et al., 1995; Oakley et al., 1995; Fisher, Fisher, Williams, & Malloy, 1994).

A second knowledge based framework used in early years of prevention programming involved fear arousal. The goal of these models was to change behaviours due to fear of consequences of present behaviour. Fear based campaigns resulted in creating public panic, without changes in behaviour towards safer sexual practices being achieved (Maticka-Tyndale, 1995).

The ineffectiveness of fear based and knowledge based interventions led to the development of more rational cognitive and decision making models (Hovell et al., 1994; Maticka-Tyndale, 1995). These models incorporated knowledge based frameworks, but included dimensions of information processing, including attitudes, beliefs and motivations. These models

remained individualistic, as each of the components are based on individuals' subjective perceptions and the belief that actions stem directly from an individual's constructed intentions to act (Maticka-Tyndale, 1995).

The rational cognitive and decision making models are premised on the assumption that individuals act rationally to increase the likelihood of positive experiences and decrease the likelihood of negative experiences. Maticka-Tyndale (1995, p. 82) summarized the shared set of premises of these models regarding behaviour, including:

1. People are information processors who follow specific, rational procedures in processing information.
2. If these procedures are correctly followed, the outcome is a rational behaviour.
3. The appropriate route to understanding non-rational behaviours is to identify the biases in thinking that might prevent people from rational action.
4. Information processing involves knowledge, attitudes, beliefs, emotions and motivations. Each of these is subjectively developed and perceived, influences the development of intentions to act in particular ways, and may be more or less biased.

5. Behaviours are preceded by intentions, and unless something interferes, intentions result in the intended behaviours.
6. Cultural and contextual variables are distal influences on behaviour. Their influences on behaviour are filtered through the intrapersonal processes and dynamics.
7. To understand and influence behaviour, it is necessary to identify the key cognitive processes that influence intentions and to in turn, influence these.

From these basic assumptions, a number of health change models were developed. The health change models that have been applied to HIV/AIDS are reviewed below. It is important to recognize that these models are generic in that they have been developed for use in a variety of health-related behaviours. None were developed specifically for HIV/AIDS intervention, but have been applied to the field.

Health belief model

The Health Belief Model (HBM) was proposed by Becker (1974) to explain health related preventive behaviours.

According to the model, variables that predict adoption of health behaviours are: 1) perceived susceptibility to a health threat; 2) perceived severity of the health threat; 3) perceived benefits and perceived efficacy of the possible actions/behaviours; 4) perceived costs or barriers to possible action/behaviours; 5) cues to action such as media attention; and, 6) modifying factors, including demographic and psychological factors. The model has been effectively applied to a variety of health-related changes in behaviour, both as an explanatory and a research tool (Janz & Becker, 1984). While the model has demonstrated predictive power for specific preventive behaviours, large proportions of the variance in the behaviour are unaccounted for by the model (Maticka-Tyndale, 1995).

Research results regarding the utility of the Health Belief Model applied to HIV/AIDS-risk reduction have been equivocal (King & Wright, 1993). Consistent with findings in other health related areas, the model seemed to effectively predict risk-reduction behaviours, but explained only a small amount of the variance (Wilson, Lavelle, Greenspan, & Wilson, 1991).

Research has been conducted assessing the association of particular dimensions of the Health Belief

Model with the adoption of HIV/AIDS-preventive behaviours. The findings have been inconsistent and ambiguous. Although some support has been found for each of the individual constructs of the HBM, this support has not been consistent. In addition to the inability of the model to account for variance, neither the individual concepts nor their interrelationships have been fully specified, and methods for their measurement have not been developed and tested for reliability and validity (Maticka-Tyndale, 1995). Additional limitations of the model in application the HIV/AIDS field include: a) most people perceive themselves to be at low risk and defend this perception - susceptibility may therefore be inadequately conceptualized; b) perceived severity of threat is a poor predictor of behaviour; c) a significant proportion of individuals do not behave in the predicted manner and may not always behave according to their beliefs; d) an underemphasis of motives and beliefs other than health (e.g. financial, physiological addiction) on behaviours; e) the causal ordering of the model makes testing and use of the model difficult - beliefs may precede behaviours or may follow and be influenced by behaviour; f) the model provides no guidance in understanding how health beliefs develop and what

maintains or changes them; and g) an inability of the model to account for change of habitual behaviours (Leviton, 1989). When applied to HIV/AIDS prevention in young people, Brown and colleagues (1991) noted a number of limitations of the HBM for this group of higher risk individuals. These limitations include the absence of maturational constructs, the relative exclusion of important factors such as emotional reactions, self-appraisal and peer-group influences which are considered modifying factors rather than direct factors. Further limitations include the inadequate attention to the complexity of the interaction between young individuals and their environment and the difficulty accounting for change in habitual behaviours.

Limitations of the Health Belief Model give rise to the development or application of theories which provide information regarding the link between knowledge, attitudes, beliefs, intentions and behaviours. The three most well received models are the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), Theory of Planned Behaviour (Ajzen, 1985; Ajzen & Madden, 1986) and the Social Behaviour Theory (Triandis,1977). Each of these theories add to the cognitive, decision-making theories an important

determinant of behaviour, that being subjective norms, or an individual's perceptions of what significant others believe is acceptable (King & Wright, 1993). Common to all of these theories is the assumption that cognitive processes, including individuals' knowledge, attitudes and subjective norms, influence their intentions towards a behaviour. Intentions are believed to be a necessary determinant of behaviour (King & Wright, 1993; Maticka-Tyndale, 1995).

Theory of reasoned action.

The first of these models, the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), focused on behaviours under volitional control. According to the model, the four factors which influence intent are: a) attitude toward or evaluation of the behaviour; b) beliefs about the behaviour; c) perception of the subjective norms or beliefs about what important others will think of the behaviour; and d) value placed on approval of others (Fishbein & Azjen, 1975). Little emphasis was placed on the external and internal factors that may impede a desired action. According to Leviton (1989), the Theory of Reasoned Action could produce

large changes in knowledge, modest changes in attitudes, and intentions, but few changes in behaviour. Despite the limitations of the theory, it has had some successful application in research relevant to HIV/AIDS prevention. Consistent with the theory, subjective norms have been found to be predictive of the practice of HIV/AIDS-preventive behaviours (Fisher & Misovich, 1989; Joseph et al., 1987).

Theory of planned behaviour.

The Theory of Planned Behaviour (Ajzen, 1985; Ajzen & Madden, 1986) followed from the Theory of Reasoned Action, but added an additional component called "perceived behavioural control". This construct explains normative influences on behaviour and the conditional factors and resources that may influence both intentions and the realization of intention in action. Examples of factors include skills, requisite information, time, opportunity, willpower and a workable plan. Both internal and external factors over which the individual has limited control are considered. Applied to the area of AIDS prevention, the adoption of risk-reduction behaviours depends on a number of factors including

partner compliance, skills, and the possession of essential information regarding a means of protection. The Theory of Planned Behaviour was found to have superior predictive ability over the Theory of Reasoned Action (Ajzen & Madden, 1986).

Social behaviour theory.

The Social Behaviour Theory (Triandis, 1977) is more comprehensive than either of the two previous theories, adding the influence of personal history, experience and habits. According to this theory, these factors may influence both the formation of intention and realization of an action. Prior behaviours may become habitual, establishing a set pattern of action that is likely to be repeated and presents a new set of difficulties for change. Thus, the model identifies factors which more fully elaborate the connections between intention and behaviour. Triandis proposes that habit, behavioural control and situational factors influence intention and mediate between intention and behaviour. A number of studies have indicated that young people who are more sexually active and accustomed to unsafe sexual practices, are less likely to alter their behaviours towards safer measures following interventions (Gerrard &

Warner, 1994; Michaud & Hausser, 1992; St. Lawrence, 1993). Addressing the effects of past behaviours and habitual behaviours may therefore be a necessary component for HIV/AIDS risk reduction programs.

Summary of cognitive/decision making theories.

Each of the cognitive rational theories described above identify the need to consider subjective norms as determinants of behaviour. This concept has been supported empirically through research regarding determinants of risky vs. safe sexual behaviours. Several studies have identified the importance of subjective norms as an influencing factor. Examples include studies completed by Joseph et al. (1987), Maticka-Tyndale (1991) and DiClemente (1991). Joseph and colleagues demonstrated that the single attitudinal predictor of gay men's change toward safer sex was the perception that peers approved. Maticka-Tyndale (1995) concluded in her study of sexually active Quebec youth, that the skill of condom use to avoid contracting HIV/AIDS was seldom employed. The peer culture did not support the use of condoms, but held monogamy in high esteem. Thus, these youths relied exclusively

on monogamy rather than condom use as their only preventive measure. DiClemente identified perceptions of peer norms to be significant determinants of risk avoidance behaviours in his sample of incarcerated adolescents. It seems apparent, therefore, that perceptions of normative peer behaviours may directly effect the degree to which safe sex practices are implemented by individuals.

While each of these theories has received empirical support, and seem to provide highly specific information about key factors influencing intentions and eventual behaviours, they are limited in their ability to identify how to utilize the models in effecting change in either the cognitive components or consequent behaviours (Maticka-Tyndale, 1995). In addition, the models are limited in their ability to account for the affective domain (Richard, van der Pligt & de Vries, 1995). The theories are incomplete in themselves but do contribute towards a more comprehensive and eclectic theory for HIV/AIDS risk reduction.

Learning Theories

Learning theories differ from cognitive psychology and decision making theories in that they address the factors that influence change. The basic premise of these models is that people need to be given reasons to alter risky behaviours and the resources to do so. These reasons and resources are located in environmental situations and conditions that provide reinforcement for a changed behaviour.

Social learning theory.

While a number of learning theories exist, the most prevalent theory applied to the field of HIV/AIDS research and prevention is the Social Learning Theory. The Social Learning Theory represents a synthesis of cognitive psychology and behaviour modification. According to the theory, human behaviour is a "continuous (reciprocal) interaction between cognitive, behavioural, and environmental determinants" (Bandura, 1977 p. Vii). Behaviour change is typically initiated in response to any one of four conditions: personal experiences, experiences of people similar to oneself, verbal persuasion, or physiological states. Thus, the link between cognitions, environmental situations, motivations

and behaviour may be identified and mechanisms that can motivate change can be taught and encouraged (Bandura, 1977, 1989).

Three key social factors of the Social Learning Theory that have been incorporated into prevention and behavioural change programs related to HIV/AIDS are self-efficacy, skills training and role modeling. Programs of HIV/AIDS risk reduction developed from a Social Learning Theory framework, tend to follow a sequence of four steps. These include: 1) provision of information to increase awareness and knowledge; 2) teaching social and self-regulatory skills necessary to translate information into preventive action; 3) development of specific skills through guided practice and corrective feedback in high-risk (or simulated high-risk) situations; and 4) enlistment of social supports that endorse the new behaviour (Maticka-Tyndale, 1995).

Interventions following a Social Learning Theory generally include role modeling through peer and near-peer educators and counselors. These have proven to be effective, primarily for delivering skills-related education (Aplasca et al., 1995; Freimuth et al., 1990; Beveridge, 1992; Slap, Plotkin, Khalid, Michelman, & Forke, 1991). Skills training in areas such as

negotiation and resistance of peer pressure have been central to several campaigns (Jemmott et al., 1990; Kelly et al., 1992; Kipke, Boyer, & Hein, 1993). The Social Learning Theory has been popular as a framework for many of the prevention programs and for much of the research implemented in the area of HIV/AIDS risk reduction (Hovell et al., 1994; Kirby et al., 1994; Maticka-Tyndale, 1995).

Theory of perceived self-efficacy.

Self-efficacy has been identified as a key component of social learning theories. Bandura (1989) developed the Theory of Perceived Self-Efficacy which has been effectively applied to HIV/AIDS-risk reduction. Self-efficacy is defined as individuals' perceptions of control over their behaviour, motivation and social environment (Bandura, 1989). According to the theory, the greater individuals' perceptions of their ability to achieve a self-directed change, the greater the likelihood they will attempt and operationalize that change. Implementation of the Theory of Self-Efficacy follows similar steps to those outlined for the Social Learning Theory, but specifies that skill enhancement includes the development of self-efficacy. Success

requires the demonstration of appropriate skills as well as perceived self-efficacy and perceived personal control. The self-efficacy theory presents it's greatest utility in the area of HIV/AIDS research and intervention as a model to both explore self-efficacy as a determinant of HIV/AIDS-risk reduction behaviours, and as a component of skills training in preventive interventions.

Summary of learning theories.

In summary, learning theories have provided a framework for some of the most comprehensive approaches to program development and implementation, and have been successful in producing changes in behaviour (Flora & Thoresen, 1988; Fisher & Fisher, 1992; Kirby et al., 1994; Oakley et al., 1995). However, the learning theories, as well as the cognitive and decision making theories, view change as a single event or occurrence. Unfortunately, changes in behaviours are not always long-term, and high rates of recidivism are common (Becker & Joseph, 1988). Because changes in sexual behaviours involve behaviours that are emotionally highly charged, it seems necessary that the programs consider a means for individuals to maintain the newly adopted behaviour and

avoid relapses (Aplasca et al., 1995; Maticka-Tyndale, 1995; Martens et al., 1994; Richard et al., 1995).

Process of Change Models

Process of change models recognize that behavioural change is not a single event but rather a process that occurs over time. Theorists proposing models from a process perspective view change as including three separate components: progress toward the desired goal; retreat away from the goal; and maintenance (Maticka-Tyndale, 1995). Two process of change models have been applied to HIV/AIDS prevention: the AIDS Risk Reduction Model (Catania, Kegeles, & Coates, 1990) and the Transtheoretical Stages of Change (Prochaska & DiClemente, 1992). Both of these models identify stages of change and processes of change which individuals may experience as they progress towards achieving a new desired behaviour.

AIDS risk reduction model.

The AIDS Risk Reduction Model was developed by Catania and colleagues (1990) specifically to address the need for AIDS intervention. The model involves three stages of change and six mediating factors that influence

progression through the stages. The three stages include:

a) recognizing and labeling of behaviour as risky;

b) making a commitment to reduce high-risk behaviour and increase low-risk behaviour; and

c) seeking and enacting strategies to implement the goals.

The six mediating factors that influence progression through the stages are:

1) perceived susceptibility to contracting HIV;

2) anxiety about the serious health consequences of HIV;

3) knowledge about HIV transmission;

4) response efficacy with respect to the belief that efficacious preventive action can be taken;

5) self-efficacy or confidence in one's ability to adopt or maintain preventive behaviour; and

6) communication skills to negotiate safer sex.

To date, the AIDS Risk Reduction Model has seldom been applied to either research or prevention. One study utilized the model to evaluate the effects of a psycho-educational and information intervention compared to a knowledge-only based intervention. The results support

use of the AIDS Risk Reduction Model as an explanatory tool, but further research is needed to determine the models effectiveness as a guide for intervention development (King & Wright, 1993; Maticka-Tyndale, 1995).

Transtheoretical stages of change model.

Similar to the AIDS Risk Reduction Model, Prochaska and DiClemente's (1992) Transtheoretical Stages of Change Model (TSCM) identifies both stages and processes of change as an individual moves toward a new desired behaviour. This model recognizes stages from before the change begins (pre-contemplation) through to maintenance of the changed behaviour. The model incorporates segments of several intrapersonal models (e.g. self-efficacy, decision-making) but identifies important processes that occur as an individual progresses through a behaviour change. Thus the TSCM identifies key issues to target in implementing interventions at the various stages of an individual's progression. The model has been used effectively in the field of changing addictive behaviours such as smoking and alcohol abuse (Prochaska & DiClemente, 1992; Prochaska, Velicer et al., 1994). Although little research has been conducted evaluating the efficacy of the TSCM in the HIV/AIDS prevention

arena, the model seems to identify major issues relevant to changing risky behaviours that may apply to HIV/AIDS intervention.

The major contribution of the Transtheoretical Stages of Change Model, is its inclusion of risk behaviour at each stage. At each stage, risks, costs and benefits are evaluated by the individual, and progression to the adoption of new behaviours occurs as individuals become intrinsically convinced that the new behaviour has greater benefit to them than the old risky behaviour. The model also identifies that changes in behaviour are not single-event occurrences, but occur as a process and wavering between new and old behaviours is common. The model incorporates concepts of knowledge, attitudes, skills, self-efficacy, intentions, behaviours and identifies links among these factors. Social contexts and environmental factors are recognized in the processes of change as influencing factors on individuals' progression through the stages (Prochaska, Redding, Harlow, Rossi & Velicer, 1994).

Summary of the Process of Change Models

The process of change models consider behavioural change to occur as a process rather than a single event

occurrence. By incorporating and linking many factors which influence the processes of behavioural change, these models appear to have utility for the area of HIV/AIDS risk reduction. The process of change models however, tend to work most effectively with one-to-one (personal counseling) programs. When applied to a group or community intervention, the dominant stage of the group must be identified, and the intervention must begin from the stage where "most people of the group members are at" (Maticka-Tyndale, 1995, p. 88). With a population as heterogeneous as a college population in maturity, knowledge, and attitudes towards sexuality in general, and HIV/AIDS specifically, identifying a dominant stage may be difficult (Grimley, Prochaska, Velicer & Prochaska, 1995).

Summary of the Individualistic Models

The models discussed thus far, are individualistic frameworks, focusing on the individual alone. Although social influence is briefly mentioned in the models, the focus of the models is on intent to act, with limited consideration of the relationship dimension of the action. The previous models are limited to the subjective domain and to individual's perceptions of sexual risk

behaviours. Although these models include a component of social influence, the influence is indirect, considered to effect intentions and ultimately behaviours. The effect and interacting effects of emotional arousal, communication between partners, perceptions of trust between partners and of dealing with conflicting intentions, seem to be overlooked (Brown et al., 1991; Grimley et al., 1995; Maticka-Tyndale, 1995; Richard et al., 1995). In the following section of this review, social-psychological models will be presented, which directly incorporate effects of environmental contexts and social influence.

Social-Psychological Models

Social-psychological models, or interpersonal models, add an additional dimension to the intrapersonal models described previously. This component is social influence, including communication and relationship between individuals and contextual situations which may directly alter individuals' intentions to act. This addition of the social and environmental contexts may provide a more realistic picture to the issues faced by young adults in their sexual activity decisions.

Following from the Problem-Behaviour Theory, a framework developed by Jessor and Jessor (1977), social-

psychological models incorporate personality, environmental and behavioural dimensions. According to Jessor and Jessor, young people's behaviours are determined by their psycho-social proneness. Psycho-social proneness is a combination of personality proneness, environmental proneness and behavioural proneness. The conceptual structure of the components of the Problem Behaviour Theory include antecedent background variables (demographics, socialization), personality and social variables (individuals' characteristics and perceived social and environmental influences) and social behaviour variables (resultant behaviours). The theory emphasizes that health related risk reduction behaviours must consider personality and environmental contexts and not focus on altering the behaviours alone. From the perspective of this model, interventions must address all three systems simultaneously.

A model stemming from the Problem Behaviour Theory applied to HIV/AIDS is the Information-Motivation-Behavioural (IMB) Skills model (Fisher & Fisher, 1992). This model integrates both intrapersonal and interpersonal domains.

Information-Motivation-Behavioural Skills

Fisher and Fisher (1992, 1993) group the factors influencing behaviours into three broad categories, information, motivation and behavioural skills. Recognizing that previous intervention models were limited in their attention to skills training and motivational enhancement, these researchers conceptualized a complex series of steps utilizing communication or scripting. Incorporating suggestions from Fisher and Azjen (1975), Fisher and Fisher (1992, 1993) advocate research be conducted prior to implementation of prevention programs to identify local and specific factors influencing each of the components of the model. Thus, normative behavioural scripts or the way most individuals behave an communicate within a specific community, are considered (Maticka-Tyndale, 1995). Using pilot studies as a guide, intervention programs may be designed based on an understanding of three aspects of a particular population including: a) level of knowledge; b) social norms; and c)dominant attitudes which may positively or negatively influence risk reduction or avoidance behaviours. In addition, pilot studies may successfully identify which skills are necessary for the specific group to engage in or avoid in

order to protect themselves from HIV/AIDS. Components of other models which are universal to all populations (self-efficacy, assertiveness skills, AIDS related communication skills), combined with the specifics identified through needs assessment research, may allow for the development of programs which may be implemented for "intact groups that have existing social networks that are capable of producing 'reverberating effects' of continuously reinforcing pro-prevention changes in AIDS risk-reduction information, motivation, behavioural skills and behaviour" (Fisher & Fisher, 1992, p. 144).

The Information-Motivation-Behavioural Skills model therefore considers individual contexts, environmental and social contexts which influence behaviour. In order to reduce risk of HIV/AIDS an individual must have: a) adequate knowledge regarding means of transmission, and how to avoid transmission; b) awareness of personal vulnerability, including effects of social and environmental influence; c) skills for performing risk-reduction actions; and d) motivation to follow through with the risk-reduction behaviours. Fisher and Fisher (1992) advocate that these factors are not mutually exclusive, but interact in their influence of behaviour.

While the Information-Motivation-Behavioural Skills model incorporates both inter and intrapersonal components and appears to account for the most salient factors effecting health related behaviours, influencing factors from the larger social, political and economical environment are not considered. Recent research on HIV/AIDS has suggested that cultural norms and societal values are key issues in the adoption of behaviours (Basch, 1989). These issues are considered important for meaningful implementation of preventive programs. The need for multifaceted, systemic approaches to HIV/AIDS prevention seems apparent (Atwood, 1992; Hovell et al., 1994; Richard et al., 1995).

Social Marketing Theories: Enabling Approaches

Tawil, Verster and O'Reilly (1995) discuss the importance of "enabling approaches" to the prevention of HIV/AIDS (p. 1299). Enabling approaches are the non-individual, environmental and social determinants that facilitate or impede a behavioural choice. Enabling approaches are those community, cultural, political or economic conditions that may remove a barrier to positive behaviour, or erect a barrier to continued unhealthy behaviours.

Based on theories of social marketing, enabling approaches to HIV/AIDS risk reduction may involve promotion of HIV/AIDS risk reduction programs where healthy sexual behaviour is the product. Thus issues regarding cost/benefit and appeal of the behaviour, or "product" must be "sold" to the target audience. In interventions, it is essential to provide clients with a clear understanding of the costs (social, psychological, financial, time, effort), perceived benefits and overall utility of adopting the new behaviour. Therefore, effective intervention strategies should stem from well designed pilot studies and informative evaluations of the determinants of behaviour, and the specific needs of the particular population (Oakley et al., 1995). In addition, social marketing philosophy suggests making large scale changes in societal values by promotion of new information on a large community scale, will provide greater acceptance of the concept by the general population. This acceptance of a new concept will then indirectly effect individuals' perceptions by providing an environment that will enable them to alter behaviours within an accepted societal norm (Tawail et al., 1995).

Numerous community interventions have been implemented from a social marketing perspective. These

interventions have been based on research indicating that changes in sexual behaviours are necessary to reduce risk of the spread of HIV/AIDS (Kirby et al., 1994). Although these interventions have been successful in raising the level of knowledge of the general population, it is difficult to determine the effect these programs have had on behaviour (Choi & Coates, 1994). Based on data from four national surveys assessing the impact of community interventions on young peoples' HIV/AIDS risk reduction behaviours, it appears the interventions have increased levels of HIV/AIDS knowledge but have had no impact on behavioural change (Kirby et al., 1994). It appears that social marketing theory alone may serve to promote knowledge of the product, but is ineffective at selling changes in behaviour to the population at large.

Summary and Implication of Extant Theories

It seems that each of the theories presented thus far have components which appear to be important in addressing HIV/AIDS intervention. However, each theory also seems to lack certain relevant components. Numerous theorists have advocated the need for a multifactoral approach to HIV/AIDS interventions (Atwood, 1992; Richard et al, 1995; Hovell et al., 1994; Oakley et al., 1995; Prochaska et al., 1994). Incorporating social marketing

philosophy with theories based on a synthesis of intrapersonal, interpersonal and progressional models has been suggested for providing a framework for research, implementation and evaluation of an effective intervention model for HIV/AIDS risk reduction (King & Wright, 1993).

Evaluations:

What Has Been Done and What Are The Effects?

Evaluations of interventions aimed at reducing the spread of the HIV/AIDS infection have been sparse. As the frightening nature of the disease, and its rapid growth in the general population became recognized, panic over the need to intervene resulted in the implementation of hit and miss programs (Maticka-Tyndale, 1995). These programs were generally poorly planned, lacking any form of theoretical base, and were focused on the delivery of knowledge alone. Few evaluations were conducted and of those that were, evaluations were methodologically weak and based primarily on the process rather than the behavioural outcome (Mertens et al., 1994; Oakley et al., 1995).

Four recent studies have reviewed the literature to evaluate the types of programs offered, the focus of the

programs and to determine qualities of interventions that have been effective (Choi & Coates, 1994; Kirby et al., 1994; Mertens et al., 1994; Oakley et al., 1995). Consensus reached by the authors of each of these papers indicates a desperate need for more thorough evaluations of intervention programs. Such evaluation will expand understanding of the affliction and allow for development of more effective programs. Tawail and colleagues (1995) discuss the importance of creating societal attitudes which will enable behavioural interventions to succeed. These societal attitudes include the population's subjective attitudes towards the issue, and important political and economic considerations of the greater social environment. Without a political/economical environment supportive of efforts to create change within the population, any efforts directed towards behavioural change will be of no avail. Therefore, society must be convinced of the need for behavioural change, and the future value of that change. Without this, little financial or political support will be realized. Reliable and valid research, both needs assessment and summative program evaluations to identify utility of the programs, may provide arguments for financial and

political support (Tawail et al., 1994; Choi & Coates, 1994; Oakley et al., 1995).

The results found in these evaluative research papers, have identified program qualities which seem to be effective in producing behavioural change. These results have been summarized below.

1. Effective programs should be developed following a sound theoretical framework, outlining clearly the goals and objectives of the program. The Social Learning Theory has provided the most effective model for intervention to date. From this perspective, the interventions included delivery of knowledge, skills training, development of self-efficacy, resistance skills training and skills to recognize risky vs. unrisky behaviours and situations. Also included in these programs were skills to incorporate efforts at altering group/peer norms and cognitive training to understand background influences including social norms and social influence.
2. The information component of the program must address specifically and directly the issue of HIV/AIDS, be basic, yet intense and accurate. Topics presented must include issues related to

transmission of HIV/AIDS, risky behaviours, and safe sexual practices (both abstinence and safe sex themes). The informative component must include all of the dangers associated with unsafe sexual practices and address the fact that everyone is vulnerable.

3. Programs should be sustained, allowing for repeated discussion of the topic. Short, one-time programs may produce short lived alterations in behaviour, but only those which provide for sustained intervention over the long term seem to produce long term effect.

4. Timing of the intervention is crucial. Programs should be implemented for youth as early as possible, but they must be consistent with the maturational level of the youth. Research prior to implementation of the program will provide information regarding the maturation level of the individuals, and the needs of that client group for intervention.

5. Provision of skills training in sexual communication and negotiation is a necessary component in effective programs. Participants may be trained in these skills through a variety of

strategies including role playing, role modeling, experiential learning, videos, etc.

6. Intervention planners should consider media and social influences, both from a subjective and objective perspective by: a) providing opportunities to discuss perceptions regarding media messages, family messages, and community messages; b) identifying social/environmental contexts which may negatively influence behaviours; and c) providing skill development to recognize and resist these influences, such as drugs and alcohol.

7. Effective interventions must reinforce clear and appropriate values and strengthen norms against unprotected sex. This must occur both within the group and within the community. A variety of teaching techniques including both abstinence and safe sex themes should be included. Communities and families should be encouraged to participate. Role models and testimonies may be useful.

8. Community/administrative support is essential to provide access to materials required for HIV/AIDS protective behaviours (condoms, sterile needles). A social marketing theory may be used to ensure

that the community and local authorities are aware of the program and its value.

9. Social marketing strategies need to be applied to heighten community awareness and response. The first step would be to determine barriers to safe sex practices based on community norms and values (religious, ethnic, moral values). Following this interventions must be developed that would encourage societal values in support of HIV/AIDS risk-reduction behaviours.

10. Identification of high risk groups within a community is crucial. Special populations include homosexuals, drug users, and youth involved in multiple deviant activities. Intense programs geared towards these groups' special needs must be designed.

All four of the evaluative papers emphasized the need to conduct evaluations of all interventions. These evaluations must be methodologically sound, include both experimental and control groups, and assess actual change in behaviour. Without evaluations, it is unclear whether efforts towards HIV/AIDS risk-reduction are effective, and whether alterations to the interventions should be

made (Doherty-Poirier & Munro, 1991; Mertens et al., 1994; Oakley et al., 1995).

Oakley and colleagues (1995) stress in their review, the importance of "undertaking pilot studies prior to the development of interventions to identify relevant cultural contexts, values, beliefs, norms and specific intervention hypotheses and packages to implement and evaluate" (p. 485). The present study proposes to meet this challenge.

In the following section of the thesis, a new model of HIV/AIDS risk reduction intervention will be described. The model has been developed by King and Wright (1993) to be used as both a research tool and a guide for implementation of HIV/AIDS prevention programs.

CHAPTER III

THEORETICAL FRAMEWORK: THE BEHAVIOUR CHANGE INTERVENTIONS MODEL

From the information presented in the preceding review, it is apparent that an eclectic, multifaceted approach towards HIV/AIDS research and intervention is required. Aware of this need, King and Wright (1993) synthesized previous intrapersonal, interpersonal and social influence theories and incorporated concepts specific to HIV/AIDS in the development of a new model, the Behavioural Change Interventions model (BCI). The model was developed to serve as a guide towards both research and practice in HIV/AIDS prevention.

The BCI is based on a social-psychological perspective, but also includes components of process of change and social marketing theories. The present study utilizes the BCI in a pilot study to determine the salience of the components and their impact on HIV/AIDS risk-reduction behaviours with a university population. Implications from the study will be utilized to: a) support the model and to serve as a guide for future interventions; or b) determine changes to the model for greater effectiveness in future research and intervention efforts.

Overview of the Behavioural Change Interventions Model

The Behavioural Change Interventions (BCI) was developed by King and Wright (1993) primarily to guide the design of HIV/AIDS prevention programs. The model represents a synthesis of other health behavioural change models and identifies determinants of sex related behaviours specific to HIV/AIDS. The BCI has been designed as a sound theoretical framework based on components of other models that have received empirical support, with special attention given to constructs which have proven to be effective in HIV/AIDS preventive interventions. The BCI integrates five central components or categories: knowledge acquisition, skills development, social contexts (attitudes and norms), personal contexts (self) and environmental contexts. While each of the components have been addressed in previous models, the BCI expands on these components. Included in the model are many factors which have been identified through research as determinants of sexual behaviour in general, and, more specifically, HIV/AIDS prevention behaviours. The first of the five components consists of the individual, intrinsic motivators including personality factors, and perceptions of normative behaviour, susceptibility to risks, severity

of risks, and cost/benefits of behaviour. The second component consists of social influences, or extrinsic motivators including family influence, peer influence and normative societal/community attitudes presented primarily through the influence of the media. The third component consists of levels of knowledge specific to HIV/AIDS. Skill development comprises the fourth component and includes assertiveness, goal setting, decision making, and cognitive practical skills. In the fifth component environmental contexts are identified which describe situations/considerations that influence behaviour, such as drugs, alcohol, and the physical environment or locus. While each of these five components may be considered as salient influential factors in health-related behavioural choices, the interacting and indirect effects of these components must also be considered.

In the following section, each of the five components will be described and operationalized. Because this is a pilot project, hypotheses will not be presented. Rather, the study will be guided by broad research questions and objectives, which are outlined in the final section of this chapter. Figure 3.1 depicts King and Wright's (1993) BCI model.

Model Components

The Behavioural Interventions Model integrates five components. These are knowledge acquisition, skill development, personal contexts, social contexts and environmental contexts. Each of these impact on the development of behavioural orientations which act as a filter or mediator of actual sexual behaviours. Following from the description of the model presented by King and Wright (1993), each of these components will be described below. Recent literature will be cited as support for the various components.

Knowledge Acquisition

In order to change behaviour, individuals must first become aware that alternatives exist, and gain knowledge regarding consequences of changing, or not changing behaviours (Catania et al., 1990; DiClemente, 1991; Fisher & Fisher, 1992; Grimley et al., 1995; Prochaska et al., 1994). Specific to HIV/AIDS, knowledge acquisition refers to an increase in knowledge on topics such as what HIV/AIDS is and prognosis for those inflicted, how it is transmitted, means of prevention of transmission, what behaviours are risky vs. those that are safe, levels of personal risk, and where additional sources of information may be located.

Results from numerous studies have indicated that although the level of knowledge is generally high in the university population, risk reduction behaviours are minimal (Baldwin & Baldwin, 1988; Baldwin et al., 1990; Butcher, Manning, & O'Neal, 1991; Doherty-Poirier & Munro, 1991; Fisher & Misovich, 1990; Grimley et al., 1995; Jemmott, Jemmott & Fong, 1992; Raab et al., 1995). This finding has been consistent with studies completed with a variety of ages (DiClemente, 1991; Hovell et al., 1994; Jacobs & Wolf, 1995; Kirby et al., 1994; Mitchell, 1996; Oakley et al., 1995; Robertson, 1995). DiClemente (1991) states

> "Clearly, HIV/AIDS knowledge is necessary for adolescents to identify behaviours which are effective risk-reduction strategies and, as important, those which are not. However...in and of itself, is not sufficient to motivate the adoption and maintenance of HIV/AIDS preventive behaviours" (p. 389).

Although knowledge alone will not result in significant behavioural changes, theorists suggest individuals must first have knowledge to act upon. Once individuals have gained knowledge, they may become empowered through various means to utilize that knowledge

in self protective behaviours (Cataina et al., 1990; Epstein, Dusenbury, Botvin, & Diaz, 1994; Prochaska, DiClemente, & Norcross, 1992; Prochaska, Redding et al., 1994). Fisher and Fisher (1992) emphasize the need to determine the level of knowledge of a particular group prior to the implementation of a HIV/AIDS risk-reduction educational program. Based on results from these elucidation studies, interventions may be developed that present information which is personally relevant, religiously or ethnically sensitive, that dispels misconceptions and is appropriate for the maturational and educational level of the participants (Brown, Barone, Fritz, Cebollero, & Nassau, 1991; DiClemente, 1992; Oakley et al, 1995; Prochaska et al., 1994; Seigel et al., 1991; Wilson & Stewin, 1993). In order to plan programs, pilot studies or needs assessments are needed to determine the specific educational needs of the target group.

The Behavioural Change Intervention Model has been developed to assess four important knowledge areas including HIV/AIDS symptoms and testing, HIV/AIDS transmission, individual HIV/AIDS prevention, and knowledge regarding other STD (King & Wright, 1993).

Skill Development

Numerous theorists have suggested that the link between knowledge and behaviour is the possession of skills. Skills provide the medium through which knowledge may be put into action (Epstein et al., 1994; Maticka-Tyndale, 1995). To date, programs which have been classified as effective have generally been from a Social Learning Framework, emphasizing skills training in a variety of areas (Choi & Coates, 1994; Fisher & Fisher, 1992; Kirby et al., 1994; Oakley et al. 1995; Yarber & Parrillo, 1992). According to the literature, skills are necessary in three broad categories: interpersonal, intrapersonal, and cognitive/practical skills. Particularly relevant to HIV/AIDS risk-reduction, interpersonal skills would include assertiveness, communication skills (particularly those relating to sexual matters), and refusal skills. Intrapersonal or cognitive process skills include decision-making, problem solving, personal control and goal setting. Practical skills may include an individual's ability to properly utilize or obtain preventive equipment, such as condoms or sterile needles (Adams, Peircy, Jurich, & Lewis, 1992; Aplasca et al., 1995; Kirby et al., 1994; Michaud & Hausser, 1992; Oakley et al., 1995).

Various authors have included self-efficacy, or an individual's perceived confidence of personal ability to perform a skill (Bandura, 1989) in the same category as skill acquisition (Fisher & Fisher, 1992; Cantania et al., 1990; Hovell et al., 1994). In the Behavioural Change Interventions model, King and Wright (1993) separate skill acquisition from self-efficacy. They claim the two are separate constructs: skill acquisition referring to possessing risk prevention skills; and self-efficacy pertaining to one's perception of having the ability to apply the skills in real life situations. While these two constructs may be related, the BCI assesses skills acquisition and self-efficacy as different constructs (see Behavioural Orientation section below for further detail).

Prior to developing programs for intervention, it is imperative that the degree to which skills are either possessed and lacking within a group be assessed. The BCI outlines four categories of skills to be assessed in the pilot study. These are interpersonal assertiveness, and intrapersonal skills including goal setting, decision making skills, and practical skills.

Social Contexts

Both knowledge and skills are necessary in order for individuals to alter present behaviours and progress towards healthier sexual practices. However, results from studies have indicated that in order for knowledge and skills to be applied in real life situations, social contexts must be considered (Ajzen & Fishbein, 1980; Ajzen, 1985; Fisher & Fisher, 1992; Hovell et al., 1994; Richard et al., 1995; Romeo & Hornik, 1992; St. Lawrence, 1993). Social contexts may be defined as external influences on an individual which are salient in the development of individuals' identities and attitudes. These include influences from family, peers, religious affiliation as well as perceived socio-cultural rules and expectations as presented by media influence. These are contexts which influence individuals' perceptions of which beliefs and modes of behaviour are accepted as normative by significant others within their immediate social environment. Individuals' perceptions of appropriate and accepted belief structures and behaviours are referred to as subjective norms (Ajzen & Fishbein, 1980; Fisher & Fisher, 1992; King & Wright, 1993). Based on the Theories of Reasoned Action and Planned Behaviour (Ajzen & Fishbein, 1980; Ajzen, 1985), motivation to

alter behaviours is a function of; a) individuals' perceptions of the outcome of adopting a new behaviour; and b) their subjective norms, or what they believe significant others think about the behaviours. Individuals will formulate ideals of appropriate behaviour based on their perceptions of peer, family and societal norms (Hovell et al., 1994; Richard et al., 1995; Romeo & Hornik, 1992).

Attitudes towards sexual behaviour are largely influenced by an individual's perception of normative behaviour (DiClemente, 1992; Maticka-Tyndale, 1995; Richard et al., 1995). Motivation towards a particular sexual behaviour occurs as a combination of individual characteristics; knowledge, skills, attitudes and subjective norms (Fisher & Fisher, 1992). Given sufficient knowledge, and possession of skills to apply that knowledge, individuals may choose to either reject or integrate peer, family and societal norms into their own repertoire of beliefs and behaviour.

Recent evaluative literature has suggested that reinforcement of sexual behaviours occurs through individuals' perceptions of approval by peers, family and/or society (Choi & Coates, 1994; Jacobs & Wolf, 1995; Kirby et al., 1994; Mertens et al., 1994). To effect

long-term change therefore, individuals' must perceive that the new behaviour is consistent with the norm. Thus, individuals' attitudes are influenced by subjective norms, and behaviours occur as a function of knowledge, skills and attitudes (Fisher & Fisher, 1992; Maticka-Tyndale, 1995; Oakley et al., 1995).

From a social-psychological perspective, social contexts influence the development of subjective norms which influence the development of attitudes. These attitudes combine with knowledge and skills towards the development of intentions towards a behaviour. The Behavioural Change Interventions model, includes social contexts as a factor which influences behavioural orientations and ultimately sexual behaviour. The social contexts construct developed by King and Wright (1993) includes an assessment of individuals' attitudes and subjective perceptions of peer, family and media influence.

Personal Contexts

Knowledge, skills and socially constructed attitudes are essential ingredients influencing behaviour. Personal characteristics or the "intrapersonal" domain, also influence behavioural choices. Personal contexts encompasses a broad range of considerations revolving

around individual perceptions of self. Thus, individuals' perceptions of who they are, how they feel about themselves, what their background is and how they fit within their social contexts, comprise their personal context.

According to King and Wright (1993), personal contexts are the internal factors which influence the extent and type of activity an individual will become involved in sexually. These personally constructed perceptions of self are a combination of self-esteem, body image, mental health, achievement, and socio-economic status. Additional influences on an individuals' perceptions of self include religiosity, ethnicity, and their relationships with peers, parents and their social network.

Of particular interest is the relationship between personal contexts and self-efficacy, or the confidence an individual possesses regarding their ability to succeed at a specific task. While King and Wright (1993) describe self-efficacy as a variable in an individual's behavioural orientation, they propose that personal contexts are highly influential in the development of self-efficacy. The Behavioural Change Interventions model considers personal contexts as a variable which

interacts with knowledge, skills, and social contexts towards a particular behavioural orientation and eventual HIV/AIDS risk-reduction behaviours (King & Wright, 1993).

Environmental Contexts

Sexual activity typically occurs between two individuals in particular settings and under certain conditions. Results from research assessing conditions and situations conducive to HIV/AIDS high-risk sexual behaviours suggest that substance abuse effects rational choices and may increase the likelihood that risky behaviours will occur (Grimely et al., 1995; Farrell, Danish & Howard, 1992). Environmental contexts refer to the physical environment and situations which may be conducive to, or act as a barrier to high-risk sexual behaviours.

A large body of literature exists linking deviant behaviours with certain environmental contexts. Smoking, drinking, and illegal drug use have often been correlated with risk-taking behaviours (DiClemente, 1991; Farrell, Danish, & Howard, 1992; Oakley, Bannen, & Dodd, 1992; Siegel, Lazarus, Krasnovsky, Durbin, & Chesney, 1991; Yarber & Parrillo, 1992). Substance abuse tends to inhibit rational decision making, regardless of

individuals' motivations and original intentions (Mertens et al., 1994; Richard et al., 1995).

Research has also correlated deviant and high-risk taking behaviours to an individual's normal locus. Where individuals tend to spend the majority of their time has been found to be an indicator of high-risk behaviours. The Behavioural Change Interventions model considers environmental contexts as an important influencing variable on risk-taking behaviours. Assessment of environmental contexts include individuals' perceptions of a) the degree to which they are involved in smoking, alcohol and/or drug abuse, and b) the environments in which they frequently spend time.

Relationship between influencing variables and behaviour: Behavioural orientation

The Behavioural Change Intervention model identifies five components which influence an individual's intentions to perform particular HIV/AIDS risk-reduction behaviours. Each of these components are considered independent variables. King and Wright (1993) propose that the independent variables (knowledge, skills, social, personal and environmental contexts) combine to create an intention towards a specific behaviour. This tendency to act in a particular way has been described by

King and Wright (1993) as the mediating variable, and has been labeled "behavioural orientations". These authors propose that the construct behavioural orientations is composed of three components: behavioural intentions, self-efficacy and sexuality attitudes.

Numerous authors have identified intentions as a mediating variable towards actual behaviours (Ajzen, 1985; Fisher & Fisher, 1992, 1993; Fishbein & Middlestat, 1989; Triandis, 1977). King and Wright (1993) propose that behavioural orientation comprises three sub-categories. The first sub-category of behavioural orientation moves beyond intentions previously operationalized to include behavioural intentions or the desire to act in a particular way. The second sub-category of behavioural orientation is self-efficacy, the confidence that individuals may succeed with their intentions. The third sub-category of behavioural orientation according to King and Wright (1993) is sexuality attitudes, internal perceptions and motivators of sexual behaviours.

Behavioural Intentions

While it is recognized that intentions are salient in decisions regarding actual sexual behaviours, the role of intentions is ambiguous. As indicated by Leviton (1989), intentions to act in a particular way, are not always realized in actual behaviours. Environmental contexts such as the use of substances or present locus may highly influence whether an individual complies with behavioural intentions (DiClemente, 1992). In addition, recent literature has suggested the influence of the affective domain, including highly charged emotions involved in sexual activity, may have a significant effect on altering behavioural intentions (Richard et al., 1995). It seems evident that considerably more research is necessary to determine the relationship between intentions and behaviours. The present study will assess the impact of the five determinant variables on behavioural intentions and consequent sexual behaviours.

Self Efficacy

Self-efficacy is a concept first introduced by Bandura (1977). It refers to individuals' intrapersonal confidence that they may effectively perform a particular

task or behaviour. If individuals feel strongly that they will be able to succeed when attempting a new skill or behaviour, they will be more likely to attempt the change. If however, individuals perceive that they will have little success achieving a new behaviour, they will be less inclined to attempt and/or succeed at the task (Bandura, 1989). As mentioned previously, numerous theorists view self-efficacy as a skill, rather than a mediating variable, as it is defined in the BCI model. Thus, while self-efficacy has been identified as an important determinant of behaviours, whether it is a skill or a mediating variable remains unclear. Clearly, research is necessary to determine the role of self-efficacy in sexual behaviours. The present study will assess this variable as a component of behavioural orientation.

Sexuality Attitudes

The Behavioural Change Interventions model has been developed specifically to deal with sexual behaviours and HIV/AIDS prevention behaviours. Thus, King and Wright (1993) included an additional variable to the behavioural intentions construct labeled "sexuality attitudes". Sexuality attitudes refers to a combination of

individual perceptions of sexual behaviours which are socially correct and approved by peers, and their intrapersonal perceptions of risk. Unfortunately, much of the recent literature indicates that regardless of individuals' knowledge regarding vulnerability towards contracting HIV/AIDS, many young individuals perceive themselves to be invulnerable or unlikely to contract the virus (Gerrard & Werner, 1995; Hovell et al., 1994; Mitchell, 1996; Oakley et al., 1995; St. Lawrence, 1993). Little research has focused on factors which influence the development of sexuality attitudes and the effect these attitudes have on actual HIV/AIDS risk reduction behaviours. Gerrard and Werner (1995) suggested further research is necessary in this domain. Thus, the present study will further assess the sexuality attitudes component of behavioural orientations as the mediating variable between knowledge, skills, personal contexts, social contexts and the environment as well as actual sexual behaviours.

Objectives of the Present Study

The present study utilizes the Behavioural Change for Interventions model as the theoretical framework for conducting a pilot study with a sample of young adults. The goal of the study is to test the BCI model as

presented by King and Wright (1993) as a possible framework guiding future research and program planning for HIV/AIDS prevention interventions. The two main objectives of the study are outlined below.

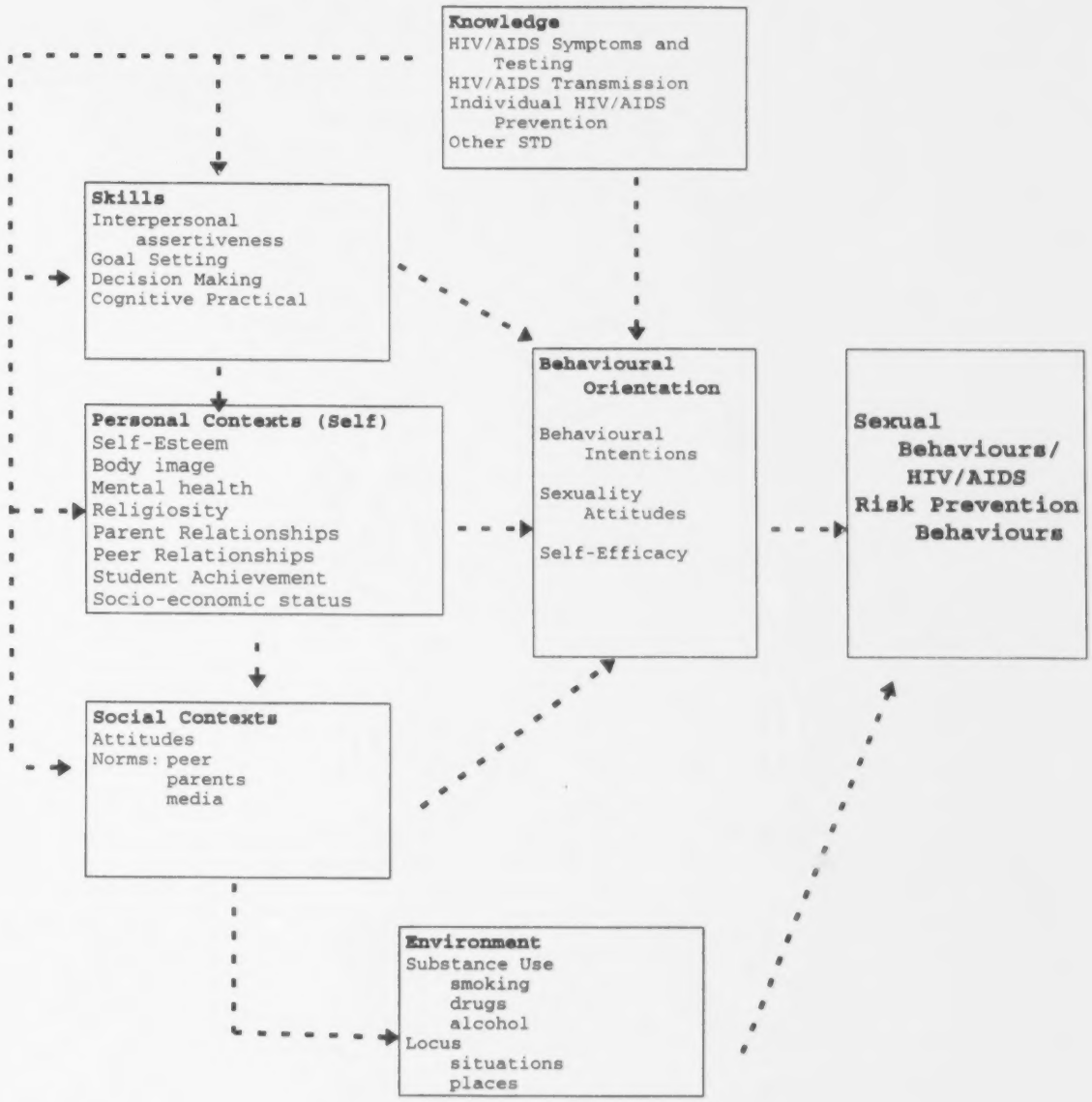
Objective I

The first objective of the present study is to determine the relative influence of knowledge, skills, personal contexts, social contexts and environment, on an individual's behavioural orientation.

Objective II

The second objective of the present study is to determine the relative influence of knowledge, skills, personal contexts, social contexts, environment, and each of the three sub-catagories of behavioural orientation on sexual behaviour and risk reduction behaviours. It is proposed that through this pilot project the relationships between constructs identified through the literature as determinants of sexual behaviours will be clarified, thus supporting, or recommending revisions to the BCI for future research and intervention planning.

Figure 3.1 BEHAVIOURAL CHANGE INTERVENTIONS MODEL



CHAPTER IV

METHODOLOGY OF THE STUDY

This chapter details the methods used in the present study and includes the following topics: study sample, data collection, instrument, measures, and data analysis. Certain limitations of the study will be described prior to a description of the results.

Study Sample

The survey data were collected from approximately 700 students enrolled in first and second year courses at the University of Alberta. These students were selected because this age range has been identified to be at risk of contracting HIV/AIDS (Doherty-Poirier et al., 1992; Richard et al., 1995; Grimley et al., 1995). Because University students are often experiencing personal control over their lives for the first time, it has been suggested that they may become involved in experimentation with sexual behaviour and consequently, increased exposure to at risk sexual behaviour.

For the purposes of this study, students were selected based on the following criterion. Students were 23 years of age or younger; single and not cohabiting. These criteria reduced the sample size to n = 515. The sample was a convenience sample and therefore non-random.

Tables 4-1 to 4-8 present available relevant demographic information on the study participants. About 72% of the sample were female, and 28% were male (Table 4.1). Twenty-eight percent were in their first year of university, 21% in their second, 17% in their third, and 28% in their fourth year (Table 4.2). Study participants represented a normal distribution in their previous year's grades (Table 4.3). Forty-six percent (46%) had a stanine grade average of 6 or higher in their previous year of studies. Almost all respondents were affiliated with a religious group and considered religion to be at least somewhat important in their lives (Table 4.4 & 4.5). Eighty-five percent of the males and 78% of the females were residing at home or with other family members, the remainder were living on their own or in shared accommodation (Table 4.6 & 4.7).

With respect to sexual orientation, 90% of the males said they were attracted exclusively to women. Ninety percent (90%) of the women indicated that they were exclusively attracted to men (Table 4.8). Fifty-six percent (56%) of all study participant females and 63% of all study participant males indicated that they currently experience mutually consenting vaginal sex and almost 49% of females and 51% of male participants engage in sexual

intercourse at least several times a year (Table 4.9 & 4.10). It is interesting to note that the number of females currently experiencing sexual intercourse at least twice per year increased by 20% once females lived away from relatives. For males the corresponding increase in currently experienced sexual intercourse was 7% once living away from relatives. Sexual activity increases for both genders, and especially for females once they begin living on their own (Tables 4.9 & 4.10)

Numbers of sexual partners for the test population are presented in Table 4.11 and 4.12. Again, an increase in sexual activity is indicated once participants were living away from relatives. Forty-three percent(43%) of females living at home verses 20% of females living away from home, had never experienced consenting sexual intercourse. Thirty-one percent (31%) of males living at home verses 18% of males living away from home, had never experienced sexual intercourse. Of the study sample, 13% of females and 19% of males have had 5 or more sexual partners. Stated another way, of those who have experienced sexual intercourse, 20% of females and 27% of males have had 5 or more partners.

Over 50% of the participant population had never taken courses on human sexuality while in University.

Forty-one percent (41%) had taken one course, and 4% had taken 2 or more courses on human sexuality (Table 4.13).

Data Collection

The questionnaires were administered by researchers and research assistants in University classes at the University of Alberta during the spring of 1995. This convenience sample was chosen for two reasons: a) it would be relatively easy to access a large number of youth of the appropriate age in a controlled manner; and b) the post-secondary student population has been identified in the literature as a population particularly at risk. While first and second year classes were chosen, some third and fourth year students were attending these classes, and therefore also completed the questionnaires. Completed questionnaires were then selected for respondents' age, marital status and student achievement according to the criteria previously described.

Instrument

The Student Sexual Behaviour Survey questions were chosen and refined based on previous qualitative and quantitative research, and on the theoretical framework, the Behavioural Change Intervention Model (King & Wright 1993). The 1988 Canada Youth and AIDS (King et al.,

1988) study was also used in the development of the questionnaire.

From this questionnaire, specific questions and corresponding scales which were considered to measure components of the BCI model were selected. Factor analysis was used to refine the scales and Cronbach alphas were calculated in order to measure the item consistency of these scales.

Appendix A specifies the test items and their scales in relation to each of the seven BCI components. Test items focus on mental health, self esteem, relationships with parents and peers, sexuality attitudes, behavioural intentions and sexual knowledge relating primarily to STD and HIV/AIDS. These categories, as tested by the selected questionnaire items, were subsequently subjected to data analysis as described later in this thesis.

Measures

All of the measures used in this study were obtained from the Student Sexual Behaviour Survey. Those student responses within most categories of the BCI were first factor analyzed and by convention, items loading at or beyond the 0.5 level were retained. Factor analysis was carried out for items within the following categories of the BCI: skills, personal contexts, social contexts,

behavioural orientation and sexual behaviours/HIV/AIDS risk prevention behaviours. Knowledge was scored as right or wrong answers and was therefore not subject to factor analysis. Similarly, environmental contexts as an index of locus was not subjected to factor analysis. Four sub-categories of the category "personal contexts" were previously tested in the 1988 Youth and AIDS study (King et al., 1988) and were not subject to factor analysis for this study.

For measures that involved the creation of indices, internal consistency scales and Cronbach alphas are presented in Table 4.14. Scale items and keys are presented in Appendix A. Factor loadings for items, and correlation coefficients are presented in Appendices B and C respectively. The complete Student Sexual Behaviour Survey is presented in Appendix D.

Factor Analysis of the Measures

Dependent Variables

Factor analysis resulted in two dependent variables. The first is a summed measure of seven items indicating sexual behaviours. The items asked respondents the frequency and number of sexual partners with which they had engaged in specific sexual behaviours. The second

dependent variable is a summed measure of two items measuring condom use. For the second dependent variable, items asked respondents to indicate how often they and/or their partner used condoms to prevent sexually transmitted diseases. These measures represent the behaviour to be predicted according to the BCI model. Table 4.15 is a description of the item content and response categories for the dependent variable. As will be noted, the response categories differ for some indices. As well, for some items a low score represents superior HIV/AIDS risk prevention behaviours. For other items, a high score represents superior HIV/AIDS risk prevention behaviours. Coding involved reverse scoring as appropriate. In all cases a higher score represents more effective HIV/AIDS risk prevention behaviours. Summation was used to derive a final raw scale score.[1]

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[1] The following example may clarify reverse scoring. Part F question 48 of the questionnaire asks respondents to indicate the number of people with which the respondent has had vaginal sex. The item responses of "a = 0" was scored as "9", while the item response "j = 9 was scored as "0". The scores for this item were summed with the other items indicating HIV/AIDS risk prevention behaviours for a final raw scale score.

Independent Variables

The independent variables in this study are knowledge, skills, personal contexts, social contexts and environment. The measurement of each construct is elaborated below, with a final summary of each construct and subcategories given in Appendix A.

Knowledge

Knowledge about HIV/AIDS was measured by 32 items, questions 85 - 116 of Part B of the questionnaire. These questions tested four subcategories of HIV/AIDS knowledge: HIV/AIDS symptoms and testing; HIV/AIDS transmission, individual HIV/AIDS prevention; and knowledge of other STD's.

Response options for each knowledge item were: "yes", "no" and "don't know". Items were scored by convention, such that incorrect responses received a zero score, correct responses receive a score of one, and items answered by "don't know" were scored as missing variables with no value. Summed indicators were then created. Table 4.16 is a description of item content and response categories for knowledge.

Skills

Skills necessary to perform HIV/AIDS preventive behaviors is the second independent variable. Items comprising the skills component of the model were factor analyzed and item loadings at or beyond the 0.5 level were retained. Three separate measures of the skills construct were created: interpersonal assertiveness, interpersonal communication and goal orientation. The interpersonal assertiveness scale is measured by four items, the interpersonal communications scale by four items, and the goal orientation scale by four items. For each scale, item responses were summed to obtain a single index.

Reverse scoring was used where appropriate, and items were then scored such that higher scores indicated stronger HIV/AIDS preventive behaviour skills. Items which comprise the skills construct as well as response categories are presented in Table 4.17.

Personal Contexts

The third independent variable, or determinant of sexual behaviour according to the BCI model, is personal contexts. Most of the sub-categories of the personal contexts construct were comprised of items previously

tested in the 1988 Youth and AIDS study (King et al., 1988). Thus, these indices including: self-esteem, mental health, and parent and peer relationships were not subjected to factor analysis. Coding for the remaining items measuring personal contexts were reverse scored as appropriate, such that higher scores indicate stronger personal contexts. Factor analysis on these remaining items resulted in three further measures or scales of personal contexts: religiosity, socio-economic status, and student achievement. Religiosity is measured by five items, socio-economic status by four items, and student achievement by two items. For each scale, item responses were summed to obtain a single index. Items which comprise the personal contexts constructs are presented in Table 4.18.

Social Contexts

The fourth independent variable and proposed predictor of sexual behaviour is social contexts. Items comprising the social contexts construct were factor analyzed and item loadings at or beyond the 0.5 level were retained. Four separate measures of the social contexts variable were created: peer norms, parent norms, attitudes, and peer norms regarding condom use.

Three items loaded on peer norms, two on parent norms, three on sexuality attitudes and four on peer norms regarding condom use. For each scale, items were summed to derive a final scale index. Items which comprise the social contexts construct, and response categories are presented in Table 4.19.

Environment

The fifth independent variable and determinant of sexual behaviour according to the BCI model, is environment. Items comprising the environment construct of substance use on the original questionnaire were factor analyzed and items loading at or beyond the 0.5 level were retained. One measure of the environment construct, substance use, emerged. Four items loaded on substance use. These items were summed to create a final scale index. Items measuring locus were not factor analyzed, but were also summed to create a final scale index. Items which comprise the environment construct and the corresponding response categories are presented in Table 4.20.

Mediating Variables

As proposed in the BCI model, the behavioural orientation construct is a function of five independent

variables or determinants. These are knowledge, skills, personal contexts, social contexts and environment. Behavioural orientation is said to mediate the effects of the five independent variables on the dependent variable of sexual behaviours and HIV/AIDS and STD risk prevention behaviour.

From the questionnaire, items measuring behavioural orientation were factor analyzed, then loadings at or beyond the 0.5 level were retained. From this, three separate measures of the behavioural orientation construct were created: behavioural intentions, sexuality attitudes and self-efficacy. Six items loaded on self-efficacy, four on intentions, and four on sexuality attitudes. For each scale, items were summed to derive a final scale index. Items which comprise behavioural orientation and the corresponding response categories, are presented in Table 4.21.

Summary and Operationalization of the Measures

In summary, sexual behaviour and HIV/AIDS risk prevention behaviours constitute the dependent variable in this study. There are five predictor or independent variables: knowledge; skills; personal contexts, social contexts and environment. Each of these predictor variables was factor analyzed and subcategories of the

predictor variables were created. Behavioural orientation, with its three sub-categories, acts as the mediating variable in this study. Internal consistency measures (Cronbach's alpha) for all scales are included on Table 4.14. Finally, a summary of the constructs and their operationalizations as identified by factor analysis, is presented in Table 4.22. The construct names as they appear in this table, will be used in the remainder of this thesis. Figure 4.1 presents the BCI with constructs as identified by factor analysis, as it was tested in this study.

Data Analysis in Testing of the Model Components

Multiple regression procedures were used to test the objectives of this study. All objectives are concerned with testing the relationships proposed among the variables outlined in the BCI model. All five independent variables and their subcategories, were first regressed on each of the three subcategories of Behavioural Orientation. Then all of the five independent variables and subcategories were combined successively with each of the three subcategories of Behavioural Orientation, and regressed against each of the subcategories of Sexual Behaviour/HIV/STD Risk

Prevention Behaviors. The regressions are summarized in Chapter 5.

Limitations of this Study

Prior to interpretation of the results, certain limitations should be considered. These limitations are primarily methodological.

Within the constructs of personal contexts and social contexts, the sub-categories of parent and peer relationship (personal contexts) and parent and peer norms (social contexts) are ambiguous. In the data analysis of these sub-categories, it may be difficult to ascertain if the relationships between social contexts and behavioural intentions are unique from personal contexts and the same mediating variable. Therefore, it may be difficult to conclude that observed quantitative relationships between one of these independent variables and the mediating variable is unique.

A second limitation is that relationships between the independent variables were not tested, mainly due to time and space limitations. This limits the extent to which conclusions may be made identifying the variables as unique and discreet.

The present study was undertaken as a pilot project. As such, the sample selected was a convenience sample,

and therefore generalizability to other populations may not be supported. However, consistent with the objectives of this study, the results may still be applicable to support or refine the model for further testing with a more representative population. Further, because pilot testing of theoretical frameworks prior to the planning and implementation of preventive programming efforts is highly recommended (Fisher & Fisher, 1992; Oakley et al., 1995), the results of this study may assist in directing future needs assessments and eventual HIV/AIDS preventive program planning for university populations.

FIGURE 4.1 BEHAVIOURAL CHANGE INTERVENTIONS MODEL AS USED IN PRESENT STUDY

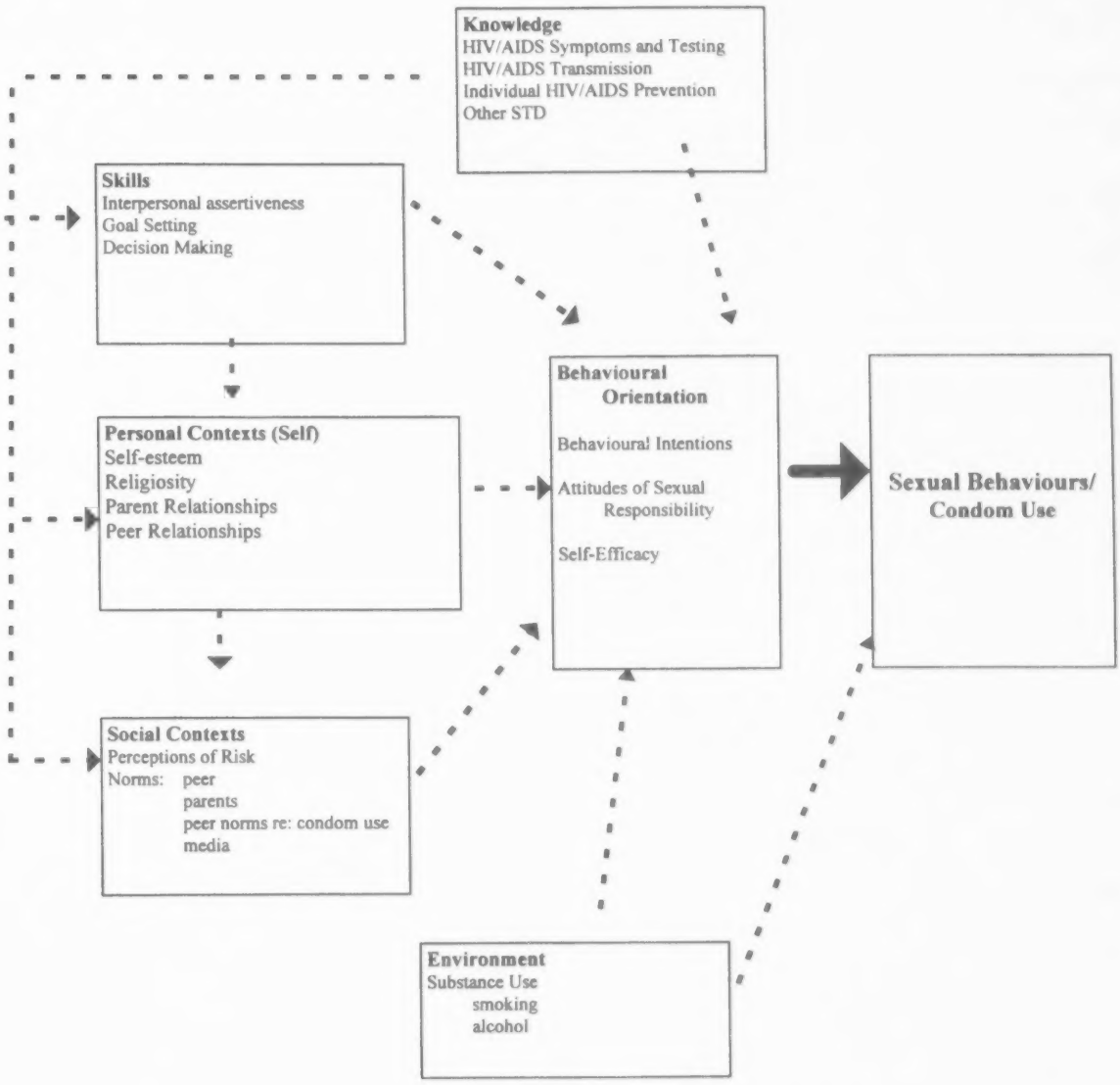


Table 4.1

Distribution of Participants by Gender

Gender	Frequency	Valid Percent
Male	143	27.8
Female	372	72.2
Total	515	100

Table 4.2

Distribution of Participants by Year of University

Year of University	Frequency	Valid Percent
1	144	28.1
2	108	21.1
3	88	17.2
4	144	28.1
5+	31	5.7
Total	515	100

Table 4.3

Distribution of Participants by Previous Years Stanine (GPA)

Grade (Stanine)	Frequency	Valid Percent
8.0 or above	18	3.5
between 7.0 and 8.0	53	10.4
between 6.0 and 7.0	164	32.1
between 5.0 and 6.0	195	38.2
between 4.0 and 5.0	60	11.7
less than 4.0	25	4.1
Total	515	100

Table 4.4

Distribution of Participants by Religious Affiliation

Religious Affiliation	Frequency	Valid Percent
Roman Catholic	101	19.6
Protestant	410	79.6
No Affiliation	0	0
Other	4	0.8
Total	515	100

Table 4.5

Distribution of Participants by Perceived Importance of Religion in Their Lives

Percieved Importance	Frequency	Valid Percent
Very Important	170	33.0
Somewhat Important	228	44.3
Not Important	117	22.7
Total	515	100

Table 4.6

Distribution of Participants by Living Arrangements

Living Arrangements	Males		Females	
Living with	Frequency	Valid Percent	Frequency	Valid Percent
alone or non relative	22	15.4	81	21.8
parents or siblings	72	50.3	178	47.8
parents	22	15.4	50	13.4
siblings	8	5.6	22	5.9
one parent	7	4.9	10	2.7
one parent and sibling relatives	11	7.7	21	5.6
	1	0.7	9	2.4
Total	143	100.0	371	100.0

Table 4.7

Distribution of Total Participants by Residence

Living Arrangements	Frequency	Valid Percent
alone or with non-relatives	103	20.0
with parents or siblings	250	48.6
with parents	72	14.0
with siblings	30	5.8
with one parent	17	3.3
with one parent and sibling	32	6.2
with other relatives	10	1.9
Total	514	100

Table 4.8

Distribution of Participants by Sexual Attraction

Gender	Frequency	Valid Percent
Males attracted to:		
only males	7	4.9
mostly males	1	0.7
males and females	1	0.7
mostly females	6	4.2
only females	128	89.5
Total	143	100.0
Females attracted to:		
only males	336	90.6
mostly males	32	8.6
males and females	1	0.3
only females	2	0.5
Total	371	100.0

Table 4.9

Distribution of Female Participants by Residence and Frequency of Vaginal Sex

Frequency of Vaginal Sex	Living with Relatives		Not living with Relatives		Total	
	Freq.	Valid Percent	Freq.	Valid Percent	Freq.	Valid Percent
never	139	48.3	22	27.8	161	43.8
Couple/yr	19	6.6	8	9.9	27	7.4
several/yr	10	3.5	9	11.1	19	5.2
once/mo	10	3.5	3	3.8	13	3.5
couple/mo	23	8.0	3	3.8	26	7.1
several/mo	12	4.2	3	3.8	15	4.1
once/wk	12	4.2	3	3.8	15	4.1
couple/wk	44	15.3	14	17.7	58	15.8
several/wk	17	5.9	10	12.7	27	7.4
daily	2	0.7	4	5.1	6	1.6
Total	288	100	79	100	367	100

Table 4.10

Distribution of Male Participants by Residence and Frequency of Vaginal Sex

Number of Partners	Living with Relatives		Not living with Relatives		Total	
	Freq.	Valid Percent	Freq.	Valid Percent	Freq.	Valid Percent
never	47	38.8	7	31.8	54	37.8
couple/yr	13	10.7	3	13.6	16	11.2
several/yr	14	11.6	1	4.5	15	10.5
once/mo	3	2.5	1	4.5	4	2.8
couple/mo	5	4.1	2	9.1	7	4.9
several/mo	4	3.3	1	4.5	5	3.5
once/wk	12	9.9	1	4.5	13	9.1
couple/wk	11	9.1	6	27.3	17	11.9
several/wk	12	9.9	0	0.0	12	8.4
Total	121	100	22	100	143	100

Table 4.11

Distribution of Female Participants by Residence and Number of Sexual Partners (Vaginal Sex)

Number of Partners	Living with Relatives		Not living with Relatives		Total	
	Freq.	Valid Percent	Freq.	Valid Percent	Freq.	Valid Percent
0	117	42.5	20	20.0	137	36.5
1	63	22.9	25	25.0	88	23.5
2	34	12.4	11	11.0	45	12.0
3	26	9.5	15	15.0	41	10.9
4	11	4.0	6	6.0	17	4.5
5	5	4.8	10	10.0	15	4.0
6	1	0.4	3	3.0	4	1.1
7	3	1.1	1	1.0	4	1.1
8	2	0.7	4	4.0	6	1.6
9+	13	4.7	5	5.0	18	4.8
Total	275	100	100	100	375	100

Table 4.12

Distribution of Male Participants by Residence and Number of Sexual Partners (Vaginal Sex)

Number of Partners	Living with Relatives		Not living with Relatives		Total	
	Freq.	Valid Percent	Freq.	Valid Percent	Freq.	Valid Percent
0	32	31.4	5	17.9	37	28.5
1	26	25.5	4	14.3	30	23.1
2	13	12.7	6	21.4	19	14.6
3	11	10.8	3	10.6	14	10.8
4	4	3.9	1	3.6	5	3.8
5	3	2.9	3	10.7	6	4.6
6	2	2.0	0	0.0	2	1.5
7	4	3.9	2	7.1	6	4.6
8	1	1.0	0	0.0	1	0.8
9+	6	5.9	4	14.3	10	7.7
Total	102	100	28	100	130	100

Table 4.13

Distribution of Participants by Number of University Level Sexuality Courses Taken

Number of Courses	Frequency	Valid Percent
0	280	54.7
1	212	41.4
2	14	2.7
3	4	0.8
4+	2	0.4
Total	512	100

Table 4.14

Measures for Internal Consistency Scales

Scales and Sub-categories	Number of Items	Reliability (Cronbach's alpha)
Skills		
Interpersonal Assertiveness	4	0.5543
Decision making	4	0.5656
Goal Orientation	4	0.5662
Personal Contexts		
Self-Esteem	7	0.7600
Mental Health	9	0.8200
Religiousity	5	0.7857
Parent Relationships	6	0.7600
Peer Relationships	12	0.7000
Student Achievement	2	0.6332
SES	4	0.6427
Social Contexts		
Perception of Peer Norms re	4	0.7434
Peer Norms	3	0.5702
Parent Norms	2	0.7833

Table 4.14 (continued)

Scales and sub-categories	Number of Items	Reliability (Cronbach's alpha)
Environment		
Substance Use	4	0.7443
Behavioural Orientation		
Behavioural Intentions	4	0.7008
Attitudes of Sexual Resp.	4	0.5989
Self- Efficacy	6	0.5855
Sexual Behaviours and HIV/AIDS Risk Prevention Behaviours		
Condom Use	2	0.5075
Sexual Behaviours	7	0.8822

Table 4.15

Item Content for Dependent Variables

BCI Model: Dependent Variables		
Main Components	Sub-Components	Items/Scale
Sexual Behaviours/ HIV/STD Risk Prevention Behaviours	Sexual Behaviours (sb_behav)	• How often have you had the following experiences: 1. Deep (open mouth) kissing 2. Petting above the waist 3. Petting below the waist 4. Oral sex 5. Sexual intercourse - vaginal sex • With how many people have you had vaginal sex? (Oral Sex)
	Condom Use (sb_cndom)	• When you had sexual intercourse, how often was a condom used? • Did you use a condom the last time you had sexual intercourse?

Table 4.16

Item Content for the Independent Variable: Knowledge

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Knowledge	HIV Symptoms and Testing (k_symp)	• AZT (azidothymidine) is a cure for AIDS. • There are blood tests that show if a person has been infected with HIV. • A person can have HIV for ten or more years without having signs of illness. • A person can be infected with HIV for up to six months before its presence can be detected. • HIV weakens the immune system by destroying red blood cells. • AIDS is the leading cause of death among Candians under age 25. • When a person has AIDS, his or her body cannot defend itself from opportunistic infections. • Most people who are infected with HIV have AIDS.

Table 4.16 (cont.)

Item Content for the Independent Variable: Knowledge

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Knowledge (cont'd)	HIV Trnsmission (k_trans)	• The AIDS virus can be spread through hugging. • The AIDS virus can be spread from a female to her unborn child during pregnancy. • When a person shares drug needles, he or she is at risk of catching the AIDS virus. • The AIDS virus may be spread from a female to a male during sexual intercourse. • Having many sexual partners increases a person's risk of catching the AIDS virus. • Homosexual females and males are equally at risk of catching the AIDS virus. • All homosexual men carry the AIDS virus. • Ear piercing is a possible way of becoming infected with the AIDS virus. • In Canada, there is an extremely small risk of being infected with HIV by having a blood transfusion • If a person has a sexually transmitted disease, his or her chances of being infected with HIV are increased.

Table 4.16 (cont.)

Item Content for the Independent Variable: Knowledge

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Knowledge (cont'd)	Individual HIV Prevention (k_preven)	• Condoms used with a spermicidal foam or gel give effective protection from the AIDS virus. • Vaseline is a good lubricant to use with a condom. • Abstaining from sexual intercourse is one of the most effective ways to avoid being infected with HIV. • A condom, when used properly, provides 100 percent protection against sexually transmitted diseases. • A vaccine is available to protect people from HIV infection. • There are drugs available that can prolong the lives of some people living with AIDS.

Table 4.16 (cont.)

Item Content for the Independent Variable: Knowledge

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Knowledge (cont'd)	Other STD (k_std)	• Although chlamydia is the most common STD, it does not lead to serious problems. • STD can make both females and males unable to have children. • Many people who have STD will not have signs of illness. • Men and women are equally likely to have serious problems if they catch an STD. • You can tell if a person has an STD by his or her looks. • Many people who have STD do not know that they have them. • You can get the same sexually transmitted disease more than once. • Sexually transmitted diseases among teenagers are rare. • STD can be caught from toilet seats. • A person can get genital herpes from oral sex. • Taking birth control pills will protect a female from STD such as gonorrhea and syphilus.

Table 4.17

Item Content for the Independent Variable: Skills

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Skills	Interpersonal Assertiveness (s_assert)	• I would stop a friend from driving if I thought they had had too much to drink. • When I have to make an important decision I get as much information as possible before making the decision. • When all the people I am socializing with are planning to drink to excess, I decide to be the designated driver. • You are at a party where some of your friends are drinking. They are pressuring you to drink. If you didn't want to drink, how confident are you that you could refuse?

Table 4.17 (cont.)

Item Content for the Independent Variable: Skills

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Skills (cont'd)	Decision Making (s_dicisi)	• When I am talking with another person about something important I ask questions when I do not understand. • When I am talking with another person about something important I ask for a reaction to what I have said. • When I am talking with another person about something important I indicate that I respect the other person's point of view. • When I have to make an important decision I think about the advantages and disadvatages of each possible choice.
	Goal Orientation (s_goalor)	• I usually give in. • I have often felt manipulated into doing something I did not want to do. • I can set realistic goals for myself. • I feel I could use a condom properly.

Table 4.18

Item Content for the Independent Variable: Personal Contexts

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Personal Contexts	Self Esteem (pc_slfest)	• I am often sorry for the things I do. • I have confidence in myself. • I like myself. • I often wish I were someone else. • I would change how I look if I could. • I often feel left out of things. • I have trouble making decisions.
	Mental Health (pc_mntlh)	• I am a happy person. • I often can't sleep without worrying about things. • I often feel lonely. • I often get frustrated. • I often feel depressed. • I sometimes have thoughts of committing suicide. • Life is just one worry after another. • The future looks good to me. • No one cares much what happens to me.

Table 4.18 (cont.)

Item Content for the Independent Variable: Personal Contexts

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Personal Contexts (cont'd)	Student Achievement (pc_stach)	• What was your average mark last semester? • In your opinion, what do your professors/instructors think about your work in University?
	Religiosity (pc_relig)	• How frequently have you gone to church or other religious institutions (e.g., synagogue) in the past 12 months. • How important is religion in your life? • How often do you pray? • How often do you read sacred writings? • What does your church or belief system teach about sex?
	SES (pc_ses)	• What is the highest level of education completed by your father? • What is the highest level of education completed by your mother. • What is the occupation of your father. • What is the occupation of your mother.

Table 4.18 (cont.)

Item Content for the Independent Variable: Personal Contexts

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Personal Contexts (cont'd)	Peer Relationships (pc_peer)	• I have a lot of friends. • I am too shy to make a lot of friends. • My friends often ask for help and advice. • I discuss my problems with friends. • If I have a problem I usually keep it to myself. • I talk about sex with my clsoe friends. • I am embarrassed when I am with someone of the opposite sex. • People of the opposite sex seem to like me. • It is easy for me to make new friends. • When I'm feeling down I turn to my friends to help me feel better. • I meet with friends before, during and after school most days. • What my friends think of me is important.

Table 4.18 (cont.)

Item Content for the Independent Variable: Personal Contexts

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Personal Contexts (cont'd)	Parent Relationships (pc_prnt)	• My parents understand me. • What my parent(s) or guardian(s) think of me is important. • I would raise my children differently from the way I was raised. • My parent(s) expect too much of me. • I ask at least one of my parents or guardians for advice on serious matters. • My parent(s) trust me.

Table 4.19

Item Content for Independent Variable: Social Contexts

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Social Contexts	Perception of Risk (sc_percep)	• I am worried about getting AIDS. • I worry about getting an STD. • Fear of AIDS is preventing me from having sex.
	Norms (Peers) (sc_peern)	• My friends and I help each other aviod taking unnecessary risks. • My friends would support me if I decided not to have sex until I was ready. • To keep your friends you have to go along with most things your friends want to do.
	Perceptions of PeerNorms Regarding Condom Use (sc_cndom)	• My friends feel that using a condom would spoil the enjoyment of sex. • Most of my friends think a person should always use a condom when having sex. • About how many of your friends use a condom when they have sex? • About how may of your friends believe that teenagers should use a condom if they have sex?
	Parental Norms (sc_prnt)	• It would bother my parent(s) to know I was having sex. • My parent(s) think that sex before marriage is wrong.

Table 4.20

Item Content for the Independent Variable: Environment

BCI Model: Independent Variables		
Main Components	Sub-Components	Items/Scale
Physical Environment	Substance Use (e_subst)	• How often do you use alcohol? • Have you ever had so much alcohol that you were really drunk? • How much alcohol do you usually drink at one time? • How many cigarettes do you usually smoke in one day?
	Locus (e_locus)	• Where do you spend most of your free time during the school term? • Thinking of a typical week during the school period (say last week), how much of your free time did you spend on each of the following activities: 1. reading newpapers, magazines or books (non-school) 2. listening to radio 3. watching TV or videos 4. going to parties or dancing 5. participating in athletic activities, sports, games 6. helping parents at home 7. dating or going out with a boyfriend or a girlfriend 8. hanging around with friends 9. going to church worshipping 10. going to the pub or bar 11. other?

Table 4.21

Item Content for the Mediating Variable: Behavioural Orientation

BCI Model: Intermedial Variables		
Main Components	Sub-Components	Items/Scale
Behavioural Orientation	Behavioural Intentions (bo_inten)	• I would tell a person I really cared just to have sex. • I expect to have casual sex in the future. • For the rest of my life, I intend to have sex with only one partner. • I plan to wait until I get married to have sexual intercourse.
	Attitudes of Sexual Responsibilty (bo_sexat)	• Making sure a condom is available is the responsibility of both partners. • Unmarried people should not have sex. • Sex before marriage is OK if you are in love. • If people think they might have sex during a date, they should carry a condom.

Table 4.21 (cont.)

Item Content for the Mediating Variable: Behavioural Orientation

BCI Model: Intermidial Variables		
Main Components	Sub-Components	Items/Scale
Behavioural Orientation (cont'd)	Self-efficacy (bo_slfef)	• I would be able to ask my partner about their past sexual experiences. • I would be able to resist being persuaded by a friend who was trying to get me to do something I didn't want to do. • I can keep myself from getting AIDS. • You have recently broken up with your boy/girlfriend. You start to date someone new who knows you have had sex and wants to have sex with you. If you didn't want to have sex with your new partner, how confident are you that you could refuse? • If my partner wanted to have sexual intercourse before I was ready, I would refuse.

Table 4.22

Operationalization of the Variables

Category and abbreviation	Construct	Definition
Skills	Interpersonal Assertiveness	Confidence to take action for what an individual believes in.
	Decision Making	Seeking and weighing of alternatives in order to make an informed and appropriate choice
	Goal Orientation	Ability to set a goal and strive to achieve it.
Personal Contexts	Self-esteem	Respect for self/ opinion of self
	Mental Health	One's perception of their emotional state.
	Student Achievement	Actual academic standing vased on stanine score
	Religiosity	Importance of religion in the individual's life.
	SES	Socio-economic status as measured by both parents education and occupation.
	Peer Relationships	Perception of self in relationships with peers.
	Parent Relationship	Perception of self in relationship with parents.

Table 4.22 (cont.)

Operationalization of the Variables

Category and abbreviation	Construct	Definition
Social Contexts	Perception of Risk	Perceived risk of contracting HIV/AIDS or other STD.
	Peer Norms	Perception of peer support and of normative peer behaviours.
	Peer Norms re Condom Use	Perceptions of peer norms regarding condom use.
	Parent Norms	Perceptions of parental approval of sexual behaviours.
Environmntal Contexts	Substance Use	Individual's reporting of alcohol and cigarette consumption. Note: No drugs were reported to be used in this sample.
	Locus	Areas individuals spend their free time.
Behavioural Orientation	Behavioural Intentions	Individual's perceptions of their intentions for future sex related behaviours.
	Attitudes of Sexual Responsiblity	Individual's perceptions of responsible sexual behaviour.
	Self-Efficacy	Individual's perceptions of their ability to achieve at goals or act in ways which are consistent with their beliefs and desires.

Table 4.22 (cont.)

Operationalization of the Variables

Category and abbreviation	Construct	Definition
Sexual Behaviour/HIV/ STD Risk Preventive Behaviour	Sexual Behaviour	Individual's reporting of frequency of actual sexual behaviour, and numbers of partners.
	Condom Use	Individual's reporting of personal condom use during sexual activities.

CHAPTER V: RESULTS

Descriptive statistics for variables used in this study were calculated, and are presented in Table 5.1. This table presents means and standard deviations for all sub-categorical variables. Pearson product-moment correlation matrices are found in Appendix C. All correlations, including item by item, were found to be significant to within a 0.05 level. For all variables used in this study, the criteria of internal consistency was met.

Construct names and discussion of constructs can be confusing. For purposes of clarity capitals will be used when referring to construct names as in the case of Behavioural Orientation. However, when describing the construct or when used in text no capitals will be used (eg. The individual's behavioural orientation was towards low risk sexual behaviour.).

Tests And Objectives

A total of nine step-wise regression analysis with pair wise deletion of missing data were used to test each of the objectives. Three regression analyses were first run. All sub-categories of each of the five independent variables (Knowledge, Skills, Personal Contexts, Social Contexts and Environment) were regressed against each of

three subcategories of the intervening variable, Behavioural Orientation. The resulting three regressions are located in Tables 5.2 through 5.4. Grouping together all sub-categorical variables of each of the independent variables, tests for between category variance. This would not have been possible if each independent variable had been individually regressed against the intervening variable.

Following these three regression analyses, were six further regressions with the inclusion of the dependent variable, Sexual Behaviour/HIV/STD Risk Prevention Behaviours. For these analyses, the following steps were taken:

1) All the sub-categories of the five independent variables were combined with each sub-category of Behavioural Orientation, the intervening variable. Thus, all sub-categories of Knowledge, Skills, Personal Contexts, Social Contexts, and Environment were first combined with Behavioural Orientation: Behavioural Intentions, then Behavioural Orientation: Attitudes of Sexual Responsibility, and finally Behavioural Orientation: Self-Efficacy. These were treated as the independent variables.

2) These combinations of independent variables were regressed step wise against each of the two sub-categories of Sexual Behaviour/HIV/AIDS Risk Prevention Behaviours (these being Sexual Behaviour, and Condom Use).

The resulting six regression analyses are presented in Tables 5.5 through 5.10. In total therefore, nine regression analyses were run. Figures 5.1 through 5.6 show the relative influence of each variable on the intervening and dependent variables.

Analysis of tolerance values for variables in all final regression equations indicated that multi-collinearity was not a problem.

Independent Variables Regressed Against the Intervening Variables

The following results describe analysis of data to test objective #1; to determine the relative influence of Knowledge, Skills, Personal Contexts, Social Contexts and Environment on an individual's Behavioural Orientation.

All sub-categories of each independent variable were regressed against each of the three subcategories of Behavioural Orientation, these being Behavioural Intentions; Attitudes of Sexual Responsibility; and Self

Efficacy. These regression analysis are presented in Tables 5.2, 5.3 and 5.4 respectively.

Independent variables regressed against Behavioural Orientation: Attitudes of Sexual Responsibility

When run for all subjects, the above regression explained 37% of the variance in Behavioural Orientation: Attitudes of Sexual Responsibility (Table 5.3). All of the independent variables in this analysis were significant at the 0.05 level. The overall F ratio for the regression was 30.273 with a significance level of 0.000.

Standardized betas revealed Religiosity to be the most significant independent variable (Beta = -0.427), Substance Use the second most important (Beta = -0.261), Knowledge of STD the third most important (Beta = -0.219) and Perceptions of Peer Norms re. Condom Use the fourth most important (Beta = 0.136). Peer Relationships was the least important of the independent variables to influence Attitudes of Sexual Responsibility(Beta = 0.016).

Independent variables regressed against Behavioural Orientation: Intentions.

When run for all subjects, the above regression analysis explained 46% of the variance in Behavioural Orientation: Intentions (Table 5.2). All of the sub-categorical independent variables in this analysis were significant to the 0.05 level. The overall F-ratio for the regression was 50.405 with a significance level of 0.000.

Standardized Betas revealed that Substance Use was the most significant independent variable (Beta = 0.576), Religiosity the second most important variable (Beta = 0.258), Peer Norms the third (Beta = 0.173) and Goal Orientation the fourth (Beta = -0.142). Interpersonal Assertiveness and Parent Relationships were the least significant variables to influence Intentions (Beta = 0.063 and 0.076 respectively).

Three measures of Personal Contexts, two measures of Social Contexts, two of Skills, and one of Environment, emerged as significant predictors of Intentions.

Independent Variables regressed against Behavioural Orientation: Self Efficacy.

When run for all subjects, the above regression explained 22% of the variance in Behavioural Orientation: Self Efficacy (Table 5.4). All of the independent variables in this analysis were significant at the 0.05 level. The overall F Ratio was 21.908 with a significance of 0.000.

Standardized Betas indicated Peer Norms to be the most significant independent variable (Beta = 0.377), Interpersonal Assertiveness to be the second most important (Beta = 0.196), Knowledge of Prevention the third most important (Beta = -0.125), and Parent Relationships to be fourth (Beta = 0.115).

One measure of Personal Contexts, one measure of Skills, two measures of Knowledge, and one of Social Contexts emerged as significant predictors of Self Efficacy.

Summary of regressions against the intervening variable

In summary Intentions is predicted by sub-categories of all independent variables except Knowledge. Within the Skills category, both Interpersonal Assertiveness and Goal Orientation significantly predict Intentions.

Within the category of Personal Contexts, Intentions is predicted by Parent Relationships, Peer Relationships and Religiosity. Two subcategories of Social Contexts predict Intentions; Perceptions of Peer Norms Regarding Condom Use, and Peer Norms. Finally, within the category of Environment, Substance Use positively predicts Intentions. The strongest predictors of Intentions are Substance Use, Religiosity, and Peer Norms.

Attitudes of Sexual Responsibility is predicted by subcategories of all the independent variables (Knowledge, Personal Contexts, Social Contexts, Skills, and Environment). The strongest predictors of Sexual Responsibility are Substance Use, Religiosity, and Knowledge of STD. In each case however, these variables negatively predict Attitudes of Sexual Responsibility.

Self Efficacy is positively predicted by Peer Norms, Interpersonal Assertiveness and Parent Relationships. While Knowledge did predict Self Efficacy, the betas were negative.

Of the three sub-categories of Behavioural Orientations, Intentions emerged as most significantly predicted by the independent variables. Both Attitudes of Sexual Responsibility and Self Efficacy were also predicted by the independent variables. However betas

were often small, and in many cases negative, contrary to intuition and to previous research.

Independent Variables and Intervening Variables, Regressed Against the Dependent Variable

All sub-categories of each independent variable were grouped first with Intentions, then with Attitudes of Sexual Responsibility, and finally with Self Efficacy. These three groupings were then regressed step wise against the two subcategories of the dependent variable Sexual Behavior/HIV/STD Risk Prevention Behaviors. The two subcategories are Sexual Behavior and Condom Use. These regression analyses are presented in tables 5.5 through 5.10.

All Independent Variables and Intentions, regressed against Sexual Behaviors.

When run for all subjects, the above regression analysis explained 36% of the variance in Sexual Behaviors (Table 5.5). All of the independent variables in this analysis were significant to the 0.05 level. The overall F ratio was 44.017 with a significance of 0.000.

Standardized betas indicated Substance Use to be the most significant independent variable (Beta = 0.502), Behavioural Intentions to be the second most significant

independent variable (Beta = 0.319), Parent Norms to be the third most important variable (Beta = 0.230), and Goal Orientation to be the fourth most important variable (Beta = -0.123) in explaining sexual behavior. Knowledge of STD was the least significant of the loading variables in explaining Sexual Behavior (0.082).

No subcategorical variables of Personal Constructs loaded when regressed against Sexual Behavior. Further, the effect of Knowledge was minimal. Two subcategories of Social Contexts, one of Skills, and one of Environment emerged as significant predictors of Sexual Behavior. Further, the intervening variable, Behavioural Orientations: Intentions emerged as a significant predictor of sexual behavior.

All independent variables and Intentions, regressed Against Condom Use.

When run for all subjects, the above regression analysis explained 17% of the variance in Condom Use (Table 5.6). All of the independent variables in this analysis were significant to the 0.05 level. The overall F ratio was 19.465 with a significance of 0.000.

Standardized betas indicated Perceptions of Peer Norms Regarding Condom Use to be the most significant

independent variable (Beta = 0.283), Behavioural Intentions to be the second most significant independent variable (Beta = -0.224), Peer Norms to be the third most important variable (Beta = 0.156), and Goal Orientation to be the fourth most important variable (Beta = 0.147) in explaining Condom Use.

No subcategorical variables of Personal Constructs or Knowledge loaded when regressed against Condom Use. Two subcategories of Social Contexts and one of Skills emerged as significant predictors of Condom Use. Further, the intervening variable Intentions emerged as a significant predictor of Condom Use.

All Independent Variables and Attitudes of Sexual Responsibility, regressed Sexual Behaviors.

When run for all subjects, the above regression analysis explained 37% of the variance in Sexual Behaviors (Table 5.7). All of the independent variables in this analysis were significant to the 0.05 level. The overall F ratio was 37.967 with a significance of 0.000.

Standardized betas indicated Substance Use to be the most significant independent variable (Beta = 0.502), Parent Norms to be the second most significant independent variable (Beta = 0.230), Attitudes of Sexual

Responsibility to be the third most important variable (Beta = -0.159), and Goal Orientation to be the fourth most important variable (Beta = -0.126) in explaining Sexual Behavior. Perceptions of Peer Norms Regarding Condom Use and Peer Norms were the least significant of the loading variables in explaining Sexual Behaviour (Beta = 0.095 and 0.093 respectively).

Three subcategories of Social Contexts, one of Skills, one of Environment, and one of Personal Contexts emerged as significant predictors of Sexual Behavior. Further, the intervening variable, Attitudes of Sexual Responsibility, emerged as a significant predictor of Sexual Behaviour.

All Independent Variables and Attitudes of Sexual Responsibility, Regressed Against Condom Use.

When run for all subjects, the above regression analysis explained 15% of the variance in Condom Use (Table 5.8). All of the independent variables in this analysis were significant to the 0.05 level. The overall F ratio was 23.274 with a significance of 0.000.

Standardized betas indicated Perceptions of Peer Norms Regarding Condom Use to be the most significant independent variable (Beta = 283), Peer Norms to be the

second most significant independent variable (Beta = 0.220), and Goal Orientation to be the third most important variable (Beta = 0.179) in explaining Condom Use.

No subcategorical variables of Personal Constructs, Knowledge or Environment loaded when regressed against Condom Use. Two subcategories of Social Contexts, and one of Skills emerged as significant predictors of Condom Use.

All Independent Variables and Self Efficacy, regressed against Sexual Behaviors.

When run for all subjects, the above regression analysis explained 35% of the variance in Sexual Behaviors Table 5.9). All of the independent variables in this analysis were significant to the 0.05 level. The overall F ratio was 35.924 with a significance of 0.000.

Standardized betas indicated Substance Use to be the most significant independent variable (Beta = 0.502), Parent Norms to be the second most significant independent variable (Beta = 0.230), Goal Orientation to be the third most important variable (Beta = -0.143), and Peer Norms to be the fourth most important variable (Beta = 0.113) in explaining Sexual Behavior. Knowledge of STD

was the least significant of the loading variables in explaining Sexual Behavior (0.086).

Two subcategories of Social Contexts, one of Skills, one of Personal Contexts and one of Environment emerged as significant predictors of Sexual Behavior. Further, the intervening variable, Self Efficacy, emerged as a significant predictor of Sexual Behavior. The effect of Knowledge was minimal.

All independent variables and Self Efficacy, regressed against Condom Use.

When run for all subjects, the above regression analysis explained 15% of the variance in Condom Use (Table 5.10). All of the independent variables in this analysis were significant to the 0.05 level. The overall F ratio was 23.274 with a significance of 0.000.

Standardized betas indicated Perceptions of Peer Norms Regarding Condom Use to be the most significant independent variable (Beta = 0.283), Peer Norms to be the second most significant independent variable (Beta = 0.220), and Goal Orientation to be the third most important variable (Beta = 0.179) in explaining Condom Use.

No subcategorical variables of Personal Constructs, Knowledge or Environment loaded when regressed against Condom Use. Two subcategories of Social Contexts, and one of Skills emerged as significant predictors of Condom Use.

Summary of Regression Against the Dependent Variable

In summary, Sexual Behaviors is significantly predicted by all three subcategories of the intervening variable Behavioural Orientations,(Intentions, Attitudes of Sexual Responsibility, and Self Efficacy). Intentions emerged as the strongest predictor of Sexual Behavior, Self Efficacy as a weak predictor, and Attitudes of Sexual Responsibility as a negative predictor of Sexual Behavior.

Condom Use is predicted by only one subcategory of Behavioural Orientations, that being Intentions. This emerged as a negative predictor of Condom Use. Condom Use was not predicted by either Self Efficacy nor Attitudes of Sexual Responsibility. In other words, the intervening variable emerged as a significant predictor of the dependent variable in only one of the three subcategories (Intentions).

Some independent variables did predict Sexual Behavior directly, rather than through the intervening variables. The Sexual Behavior subcategory of the dependent variable was significantly predicted by Parent Norms, Perceptions of Peer Norms Regarding Condom Use, and Substance Use, when grouped with Intentions for the regression analysis. When grouped with Self Efficacy, Sexual Behavior was directly and negatively predicted by Peer Relationships and Goal Orientation, and directly and positively predicted by Parent Norms and Substance Use. Knowledge of STD had a small and positive beta when regressed against Sexual Behavior. When grouped with Attitudes of Sexual Responsibility for the regression analysis, Peer Norms, Parent Norms, Perceptions of Peer Norms Regarding Condom Use, and Substance Use all positively predicted Sexual Behavior directly (not through the intervening variable). Peer Relationships and Goal Orientation negatively and directly predicted the dependent variable, Sexual Behavior.

Likewise, certain independent variables did predict the dependent variable Condom Use directly (not through an intervening variable). These were Perceptions of Peer Norms Regarding Condom Use, Peer Norms and Goal Orientation when grouped with Intentions. All these

predictors regressed positively. When grouped with Attitudes of Sexual Responsibility or with Self Efficacy, Condom Use was directly predicted by Peer Norms, Perceptions of Peer Norms Regarding Condom Use, and Goal Orientation. Again, all these independent variables predicted Condom Use positively. As mentioned, of the intervening variable Behavioural Orientation, neither of the subcategories of Attitudes of Sexual Responsibility nor Self Efficacy directly predicted Condom Use.

Table 5.1

Means & Standard Deviations for Variables & Indices Used

Variable/Index	Valid N	Mean	S.D.
K_Preven	508	3.89	1.37
K_Symp	509	4.72	1.61
K_Trans	508	6.19	2.34
K_Std	506	7.45	2.87
S_Assert	510	16.27	2.51
S_Decisi	510	16.83	2.24
S_Goalor	505	15.12	2.66
PC_Slfes	505	24.68	4.97
PC_Mntlh	504	33.46	6.19
PC_Relig	513	8.33	5.31
PC_Prnt	504	22.26	4.18
PC_Peer	504	46.29	5.93
PC_Stach	512	7.29	2.50
PC_SES	513	11.58	3.42
SC_Prnt	494	5.01	2.34
SC_Peern	502	12.33	2.03
SC_Cndom	503	13.20	3.21
SC_Risk	504	9.96	1.39
E_Subst	482	15.64	3.67
E_Locus	480	25.62	4.86
BO_Inten	492	12.53	3.71
BO_Sexat	490	16.87	2.43
BO_Slfef	493	24.12	3.50
SB_Behav	473	19.07	8.71
SB_Cndom	393	2.54	1.79

Table 5.2

Results of Stepwise Regression Analysis for All Independent Variables Regressed Against Behavioural Orientation: Intentions, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
E_SUBST	0.583	0.576	0.332	15.304	0.000
PC_RELIG	0.180	0.258	0.063	6.982	0.000
SC_PEERN	0.316	0.173	0.028	4.757	0.000
S_GOALOR	-0.200	-0.142	0.019	-3.939	0.000
SC_CNDOM	-0.099	-0.085	0.006	-2.309	0.021
S_ASSERT	0.153	0.063	0.006	2.444	0.015
PC_PEER	-0.055	-0.088	0.006	-2.215	0.027
PC_PRNT	0.067	0.076	0.005	2.041	0.041

R Sqd = 0.464 F = 50.405 Sig. = 0.000

Table 5.3

Results of Stepwise Regression Analysis for All Independent Variables Regressed Against Behavioural Orientation: Attitudes of Sexual Responsibility, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
PC_RELIG	-0.196	-0.427	0.182	-10.259	0.000
E_SUBST	-0.173	-0.261	0.065	-6.334	0.000
K_STD	-0.186	-0.219	0.047	-5.598	0.000
PC_PEER	0.066	0.016	0.025	4.146	0.000
SC_CNDOM	0.103	0.136	0.018	3.556	0.000
K_PREVEN	-0.201	-0.113	0.010	-2.706	0.007
SC_PRNT	-0.110	-0.105	0.008	-2.478	0.014
PC_SLFES	-0.048	-0.098	0.007	-2.220	0.030
S_ASSERT	0.104	0.108	0.007	2.419	0.016

R Sqd = 0.370 F = 30.273 Sig. = 0.000

Table 5.4

Results of Stepwise Regression Analysis for All Independent Variables Regressed Against Behavioural Orientation: Self Efficacy, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
SC_PEERN	0.650	0.377	0.142	8.856	0.000
S_ASSERT	0.274	0.196	0.032	4.264	0.000
K_PREVEN	-0.321	-0.125	0.016	-3.003	0.003
PC_PRNT	0.096	0.115	0.012	2.709	0.007
K_TRANS	-0.141	-0.094	0.008	-2.251	0.025
E_LOCUS	0.069	0.095	0.008	2.284	0.023

R Sqd = 0.219 F = 21.908 Sig. = 0.000

Table 5.5

Results of Stepwise Regression Analysis for All Independent Variables and Intentions, Regressed Against Sexual Behaviors, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
E_SUBST	1.19	0.502	0.252	12.558	0.000
SC_PRNT	0.854	0.230	0.059	5.701	0.000
BO_INTEN	0.522	0.319	0.032	6.822	0.000
S_COGPRA	-0.403	-0.123	0.014	-3.142	0.002
SC_CNDOM	0.274	0.102	0.010	2.678	0.008
K_STD	0.249	0.082	0.006	2.174	0.030

R Sqd = 0.364 F = 44.017 Sig. = 0.000

Table 5.6

Results of Stepwise Regression Analysis for All Independent Variables and Intentions, Regressed Against Condom Use, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
SC_CNDOM	0.158	0.283	0.080	5.815	0.000
BO_INTEN	-0.108	-0.224	0.050	5.890	0.000
SC_PEERN	0.137	0.156	0.019	2.913	0.004
S_GOALOR	0.099	0.147	0.019	2.986	0.003

R Sqd = 0.168 F = 19.465 Sig. = 0.000

Table 5.7

Results of Stepwise Regression Analysis for All Independent Variables and Attitudes of Sexual Responsibility, Regressed Sexual Behaviors, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
E_SUBST	1.193	0.502	0.252	12.558	0.000
SC_PRNT	0.854	0.230	0.049	5.701	0.000
BO_SEXAT	-0.568	-0.159	0.021	-3.751	0.000
S_GOALOR	-0.414	-0.126	0.015	-3.195	0.002
SC_PEERN	0.575	0.173	0.015	3.326	0.002
SC_CNDOM	0.257	0.095	0.008	2.345	0.019
PC_PEER	-0.136	-0.093	0.006	-2.134	0.033

R Sqd = 0.366 F = 37.967 Sig. = 0.000

Table 5.8

Results of Stepwise Regression Analysis for All Independent Variables and Attitudes of Sexual Responsibility, Regressed Condom Use, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
SC_CNDOM	0.158	0.283	0.080	5.815	0.000
SC_PEERN	0.194	0.220	0.042	4.327	0.000
S_COGPRA	0.121	0.179	0.030	3.734	0.000

R Sqd = 0.153 F = 23.274 Sig. = 0.000

Table 5.9

Results of Stepwise Regression Analysis for all Independent Variables and Self Efficacy, Regressed Sexual Behaviors, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
E_SUBST	1.193	0.502	0.252	12.558	0.000
SC_PRNT	0.854	0.230	0.049	5.701	0.000
S_GOALOR	-0.468	-0.143	0.019	-3.598	0.000
SC_PEERN	0.484	0.113	0.011	2.784	0.006
PC_PEER	-0.156	-0.106	0.008	-2.397	0.017
BO_SLFEF	0.217	0.087	0.006	2.113	0.035
K_STD	0.262	0.086	0.006	2.257	0.025

R Sqd = 0.352 F = 35.924 Sig. = 0.000

Table 5.10

Results of Stepwise Regression Analysis for all Independent variables and Self Efficacy, Regressed Condom Use, for All Participants

Variable	B	Beta	R sqd	T-Ratio	Sig T.
SC_CNDOM	0.158	0.283	0.080	5.815	0.000
SC_PEERN	0.194	0.220	0.042	4.327	0.000
S_GOALOR	0.121	0.179	0.031	3.734	0.000

R Sqd = 0.153 F = 23.274 Sig. = 0.000

FIGURE 5.1
RELATIONSHIP OF INDEPENDENT VARIABLES TO BEHAVIOURAL INTENTIONS AND SEXUAL BEHAVIOURS

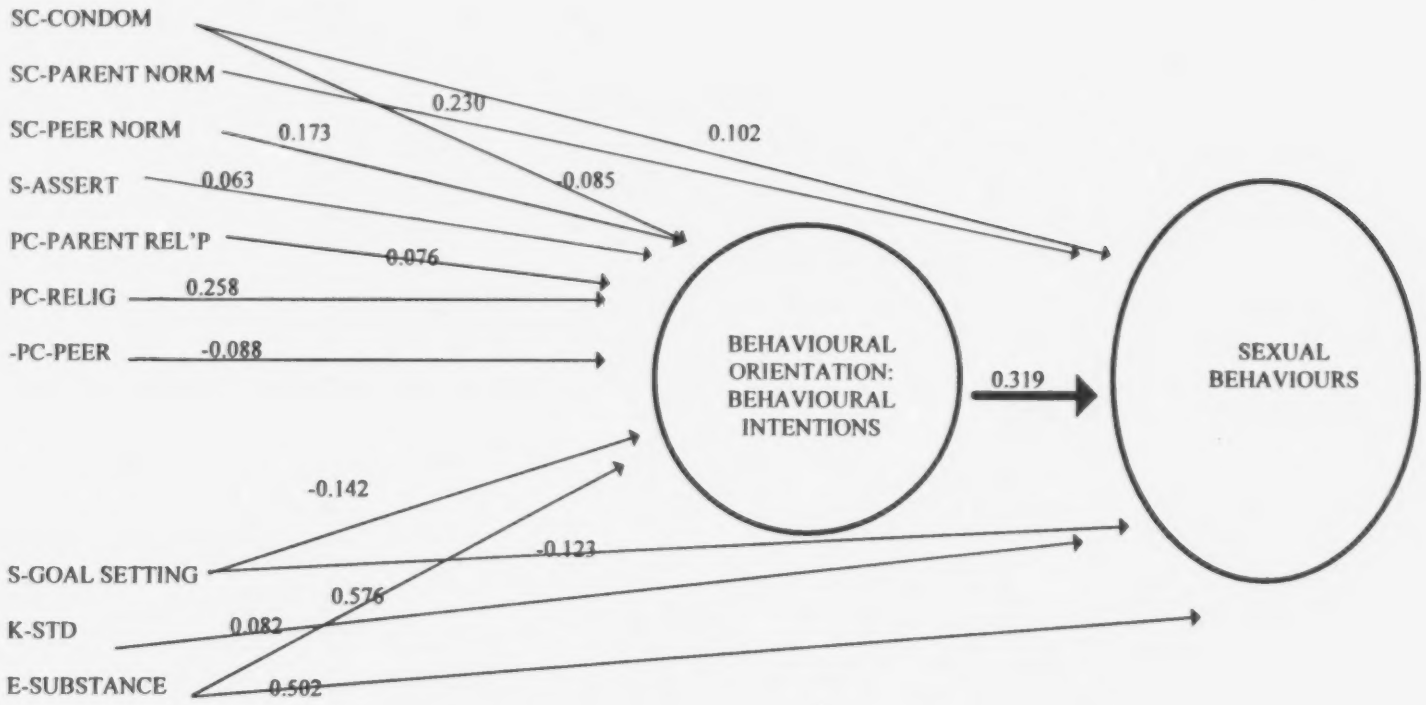


FIGURE 5.2
RELATIONSHIP OF INDEPENDENT VARIABLES TO BEHAVIOURAL INTENTIONS AND CONDOM USE

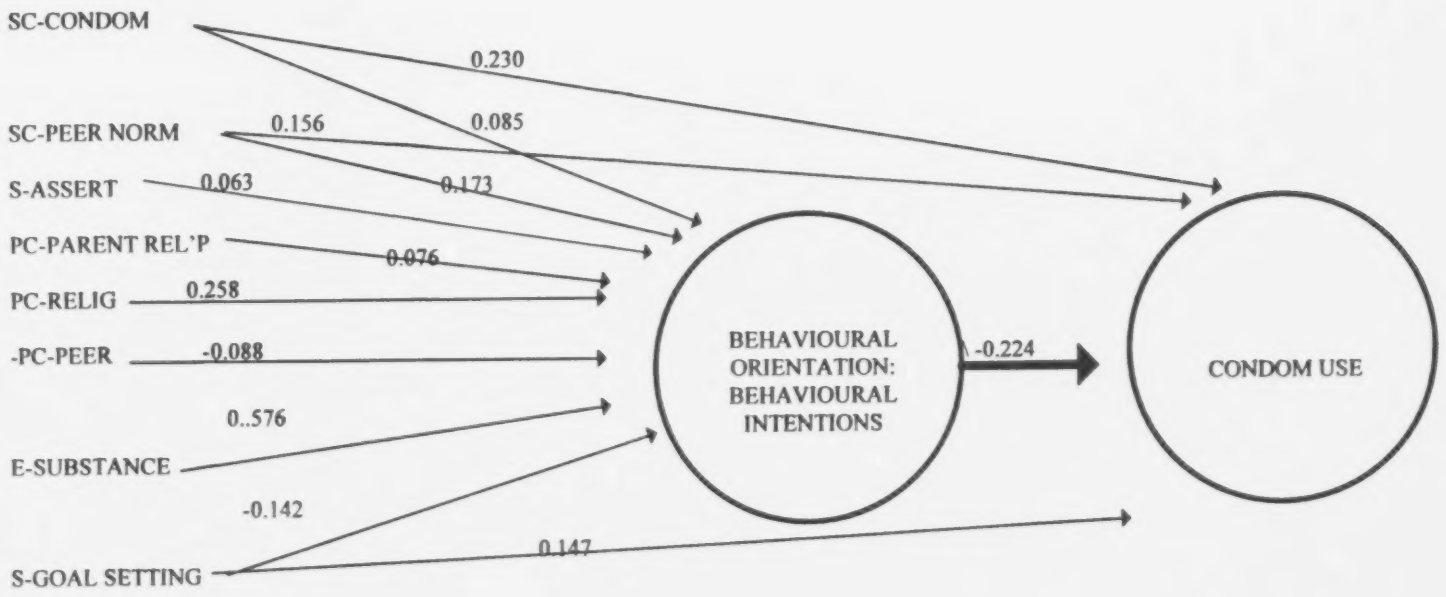


FIGURE 5.3
RELATIONSHIPS OF INDEPENDENT VARIABLES ON ATTITUDES OF SEXUAL RESPONSIBILITY AND SEXUAL BEHAVIOURS

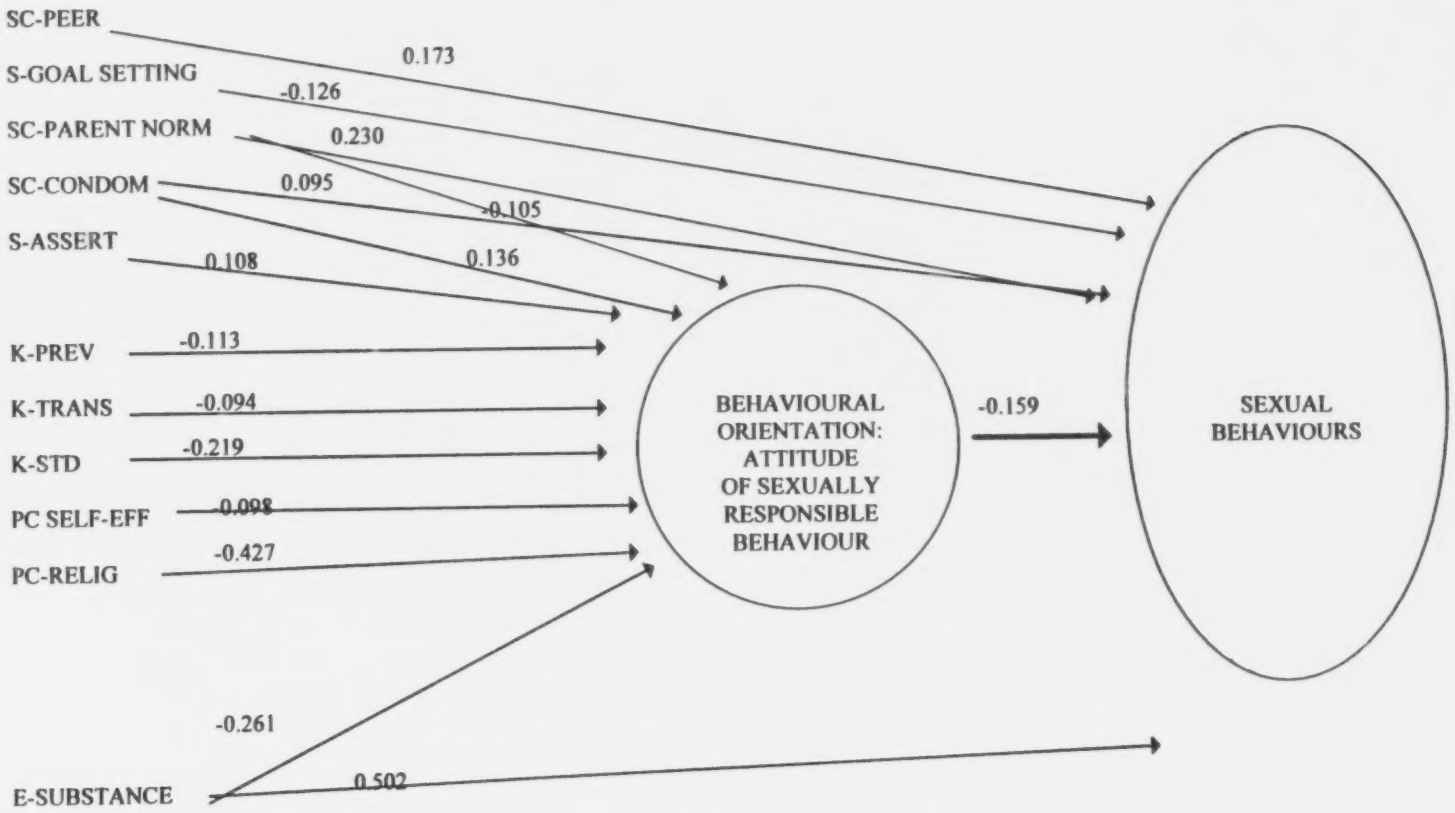


FIGURE 5.4
RELATIONSHIP OF INDEPENDENT VARIABLES TO ATTITUDES OF SEXUAL RESPONSIBILITY AND CONDOM USE

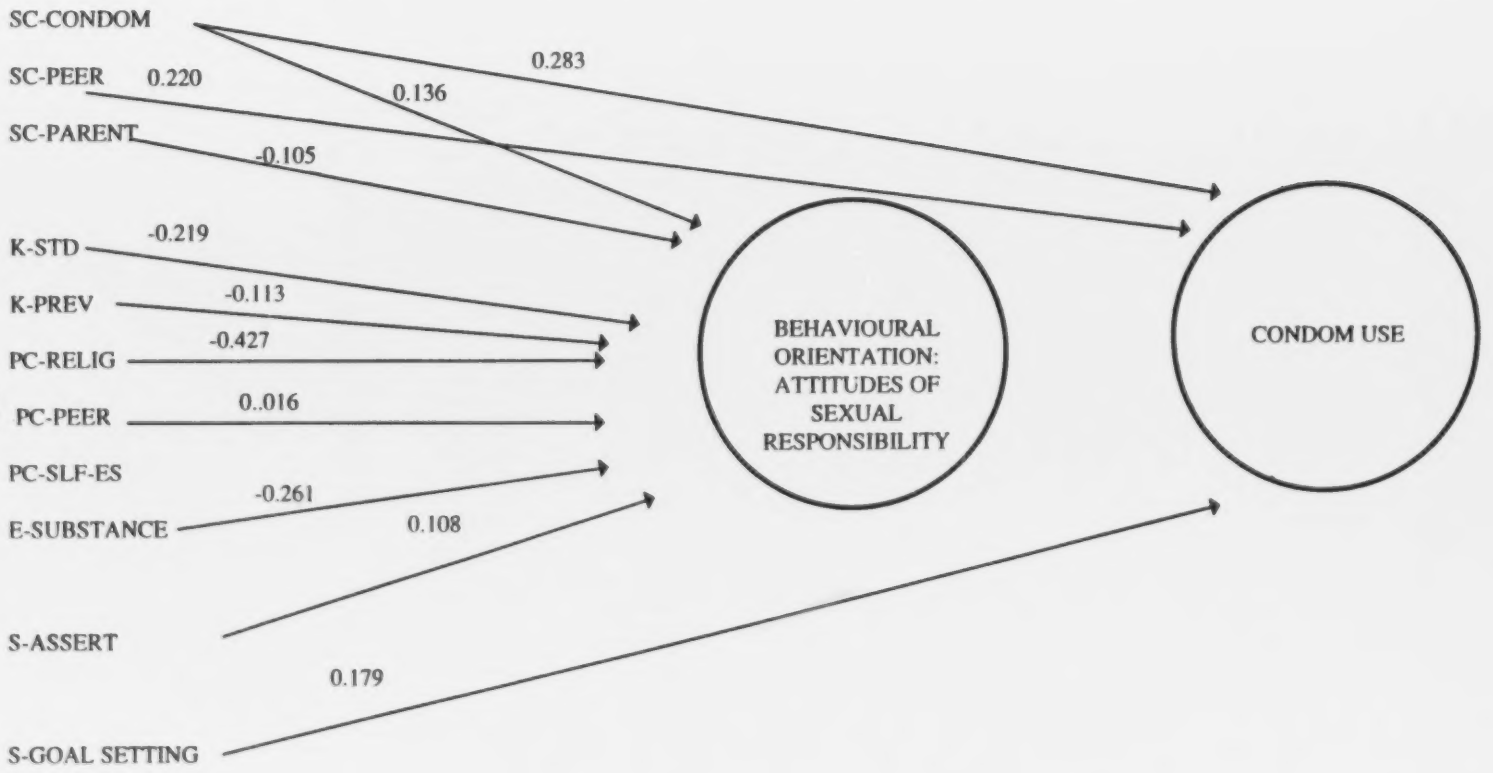


FIGURE 5.5
RELATIONSHIPS OF INDEPENDENT VARIABLES ON SELF-EFFICACY AND SEXUAL BEHAVIOURS

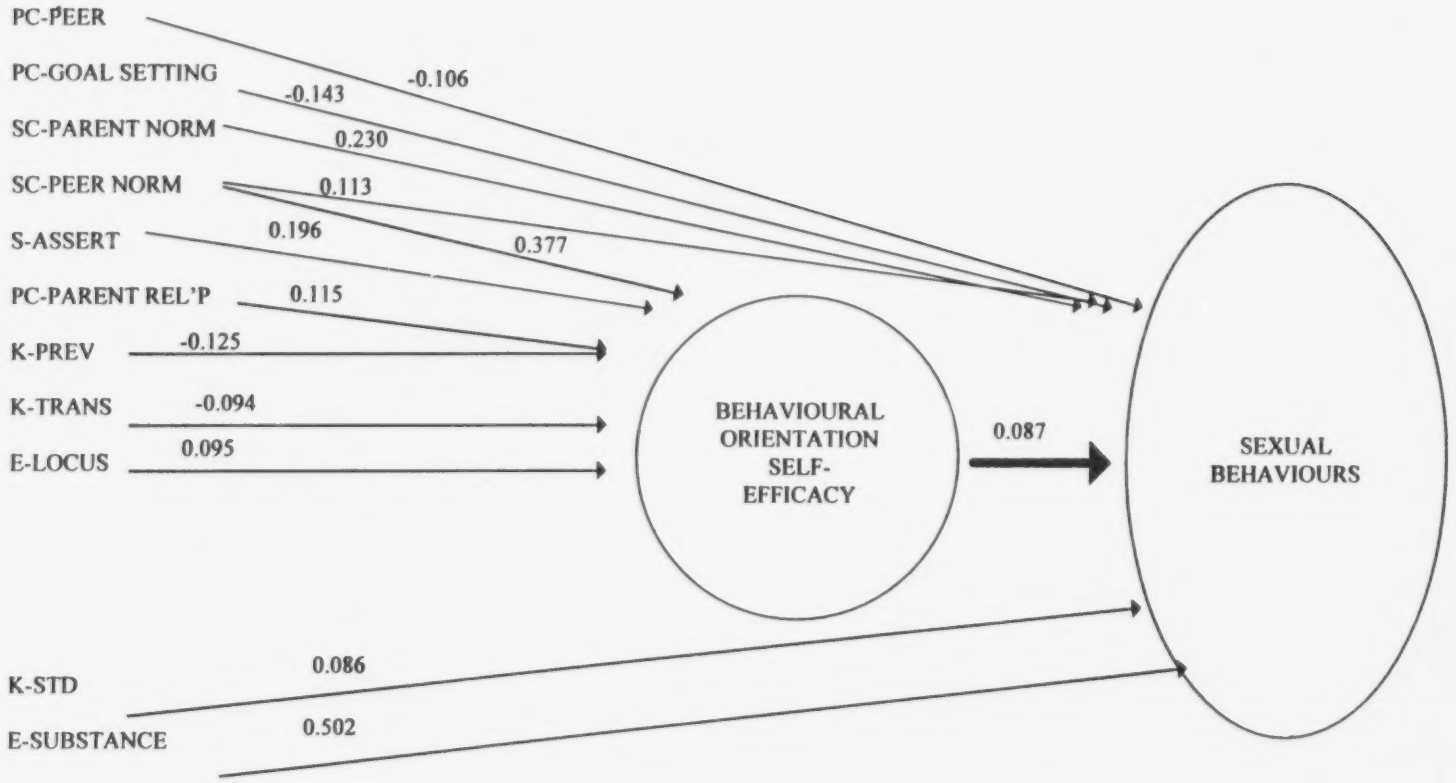
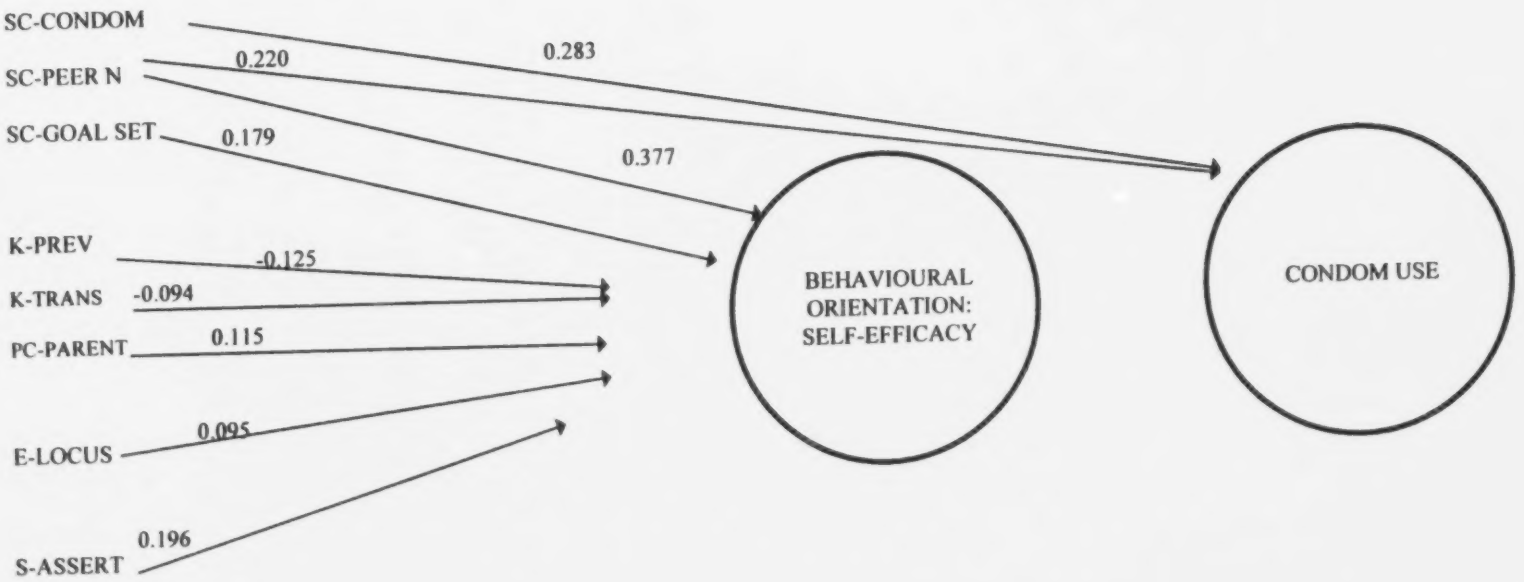


FIGURE 5.6
RELATIONSHIP OF INDEPENDENT VARIABLES TO SELF-EFFICACY AND CONDOM USE



CHAPTER VI: DISCUSSION

The BCI model has been proposed as a framework to guide both research and design of HIV/AIDS interventions for at risk youth. This pilot project investigated the potential strengths of the model, by analyzing relationships among variables presented within the model. This study is not exhaustive. Rather, it represents the first step in a process which will ultimately yield a strong model for research, and for planning, implementation and evaluation of HIV/AIDS interventions. Discussions of the results will be divided into four sections: 1) a discussion of intervening variables and their effect on dependent variables; 2) a discussion of independent variables directly predicting dependent variables, not through the intervening variable; 3) a discussion of those independent variables which had no effect on any other variables, intervening or dependent; and 4) a summary of the most salient results. Finally, implications for revisions to the BCI will be presented.

Intervening Variables: Behavioural Orientation

The intervening variable, Behavioural Orientation, consists of three sub-categories: Self-Efficacy, Attitudes of Sexual Responsibility and Behavioural Intentions. The relationships of the independent

variables to each of the Behavioural Orientation sub-categories will be outlined below.

Self-Efficacy

Self-Efficacy has been defined as confidence that enables individuals to act in ways which are consistent with their beliefs and desires. Self-Efficacy did not significantly predict condom use, and explained less than 1% of the variance in sexual behaviour. The results cast some doubt over the reliance of Self-Efficacy as an intervening variable. Two possible explanations for the results found in this study include the possibility that Self-Efficacy is another facet of Self-Esteem, or that Self-Efficacy is actually a skill and, therefore, an independent rather than an intervening variable.

Reviewing the items measuring Self-Efficacy, the face value of the items seem to be very similar to Self-Esteem. If this is the case, the BCI may be testing a personal construct both as an independent variable and an intervening variable. Further factor analysis between categories of variables may assist in teasing apart not only relationships within categories of variables, but also the more subtle relationships existing among categories of variables. This may ensure construct validity.

Previous research has identified Self-Efficacy as a skill which may be learned (Fisher & Fisher, 1992; Bandura, 1989). While King & Wright (1993) have defined Self-Efficacy in their model as an intrinsic motivator which intervenes between skills and action, the results of the data analyzed in this study do not support this relationship. It seems Self-Efficacy may be a skill, influenced by Parental Relationships (Personal Context), Peer Norms (Social Context), and Knowledge, with effects similar to other Skills (Goal Orientation and Interpersonal Assertiveness) in predicting Sexual Behaviour.

Attitudes of Sexual Responsibility

Attitudes of Sexual Responsibility measures individuals' perceptions of sexually responsible behaviour. As an intervening variable, Attitudes of Sexual Responsibility has no predictive effect on Condom Use and negatively predicts Sexual Behaviour. Both of these relationships are opposite to the direction that may be expected.

From previous literature, it would be expected that those respondents who believe it is appropriate to behave in a sexually responsible manner, would also be more likely to report use of condoms(Michaud & Hausser, 1992;

St. Lawrence, 1993). The results from this study are contrary to those findings. One possible explanation for this result may be that individuals who are currently in long-term relationships with one partner may not perceive condoms as necessary to decrease the likelihood of HIV/AIDS transmission. These individuals may perceive condoms as necessary for sexually polygamous relationships, or for contraception. If other means of contraception are being employed, the use of condoms may be perceived as unnecessary. Selecting for individuals involved in long term relationships produced the following results. Of 122 females in long term relationships, 18 used condoms consistently, and of 40 males in long term relationships, only 1 used condoms consistently. Further analysis demonstrated that of these 18 females regularly using condoms, 15 used condoms as birth control. This suggests that for couples involved in long-term relationships, condoms are not perceived as necessary to decrease risk of HIV/AIDS infection. Consistent with the findings in previous research, these individuals may believe they are behaving responsibly without the need for condoms (Robertson, 1995). Selecting for individuals sexually involved in short term and polygamous relationships may help to further

establish the reliance of Attitudes of Sexual Responsibility as an intervening variable.

Attitudes of Sexual Responsibility negatively predicts Sexual Behaviour, which means that those individuals who believe sexually responsible behaviour is appropriate, also report higher frequency of sexual behaviour. In this case, it would appear that sexually responsible individuals are more apt to engage in sexual behaviour than is an individual who is less sexually responsible. This contrary result may be confounded once again by individuals engaged in long term relationships, whose attitudes of sexual behaviour are responsible, and who, by nature of their relationships, are more sexually active. Further testing of this variable is necessary, selecting for sexually monogamous and sexually polygamous relationships separately, to explain the effect of this variable on the dependent variables and to determine the fit of this variable into the BCI.

Intentions

Behavioural Intentions is a construct which has been suggested in previous literature to be an important intervening variable. In this study, Behavioural Intentions or individuals' expectations of future sexual

behaviour, positively predicted Sexual Behaviour and negatively predicted Condom Use.

Although Intentions positively predicted sexual behaviour or frequency of sex in this study, the relationship was weak, accounting for only 3% of the variance. This may be in part because Behavioural Intentions may reflect Social Desirability. Individuals may intend to do what they perceive peers, parents, and other significant others expect. If this is the case, results should show that Behavioural Intentions are predicted by Peer Norms, Parental Norms and Religiosity. To a large extent this is in fact the case. Peer Norms and Religiosity do positively predict Behavioural Intentions. While Parental Norms did not predict Behavioural Intentions, Parental Relationships did. It would seem that Behavioural Intentions are influenced by the strength of the parent relationship. Parental Norms did not predict Behavioural Intentions, but did directly predict Sexual Behaviour. This may lend further support for Behavioural Intentions reflecting social desirability.

Numerous variables predict Sexual Behaviour directly, rather than through Behavioural Intentions. These include Goal Setting, Perceptions of Peer Norms

Regarding Condom Use, Parental Norms and Substance Use. Rather than an intervening variable, Behavioural Intentions may be a determinant of Sexual Behaviour similar to other independent variables such as Social Contexts, Personal Contexts and Skills.

That Intentions predicts Condom Use negatively is a confusing finding. This suggests that those more apt to have casual, frequent or polygamous sex, are less likely to use condoms. This may be due to the confounding effects of long-term relationships. Those more apt to have frequent sex, may be those involved in long term relationships, and also, as previously discussed, those less likely to use condoms. Another possible explanation involves perception of risk. Perhaps those engaged in the most frequent sexual behaviour do not perceive themselves to be at risk. This too however, may be confounded by long term relationships. Once again, further research would be valuable before predictive relationships involving Intentions and Condom Use can be accurately understood.

Summary of Behavioural Orientation

While intervening variables make sense intuitively, the results from the analysis of the data in this study suggest that the three intervening variables, Self-Efficacy, Attitudes of Sexual Responsibility and Behavioural Intentions do not act as intervening variables predicting Sexual Behaviour. It may be beneficial to analyze these variables as independent variables, with potential direct effects on Sexual Behaviour. This will be discussed further in the summary and implications for modifications to the BCI.

Direct Relationships

In this study, many of the most significant relationships between independent variables and dependent variables were direct, and were not filtered through an intervening variable. These direct relationships are discussed below.

Environment

The Environment category included two subcategories: Substance Use and Locus. Only Substance Use produced a significant direct effect on the dependent variable.

Substance Use

The sub-categorical variable Substance Use, measures individuals' use of drugs and cigarettes. Higher use of these substances may reflect a higher risk taking behaviour, as suggested in other research (Farrell, Danish & Howard, 1992; Ennet & Bauman, 1993; Seigel et al., 1991). High risk taking behaviours in general, may be reflected in greater sexual risk taking behaviour. Substance Use emerged as a strong predictor of the dependent variable, accounting for 25% of the variance in Sexual Behaviour. Those individuals who indicated higher substance use may find themselves in more situations and environments conducive to casual and unprotected sex. As a factor involved in an HIV/AIDS intervention, Substance Use may have particular salience (Diclemente, 1992; Grimely et al., 1995). This is especially true when other predictor relationships involving Substance Use are considered. Substance use also strongly and positively predicts Behavioural Intentions and Attitudes of Sexual Responsibility. Thus, high substance use predicts intentions of frequent and casual sex, as well as attitudes contrary to sexually responsible behavior. Similarly, low substance use predicts less frequent or

casual sex and predicts attitudes of sexually responsible behaviour. From these results, it may be suggested that HIV/AIDS interventions for young adults that do not address substance use may be neglecting a crucial component or predictor of sexual behaviour.

As discussed previously, it is tempting to dismiss the salience of any relationships of independent variables to intervening variables in the BCI, especially since the results of relationships between these intervening variables and the dependent variables were somewhat ambiguous. However, the strength of the relationship between Substance Use and the intervening variables may lend support to treating these intervening variables as independent variables, as well as environmental contexts as intervening variables. Substance Use strongly predicts Sexual Behaviour. Substance Use is also strongly predictive of Behavioural Intentions, Attitudes of Sexual Responsibility and Self-Efficacy. These three Behavioural Orientations are correlated to Substance Use and may also predict Substance Use. Substance Use may be the mediating variable through which many other variables operate, resulting in patterns of Sexual Behaviour.

It is interesting that Substance Use does not predict Condom Use. This may be because of long term relationships, as previously mentioned, or it may simply be a result of sexual patterns already established. Those individuals who consistently use condoms, may do so whether or not they have been drinking. Therefore, Substance Use may effect frequency of sex more than protection against STD.

Skills

The Skills construct included three sub-categories including Goal Orientation, Decision Making, and Interpersonal Assertiveness. While Decision Making did not seem to have a direct effect on Sexual Behaviour nor Condom Use, Goal Orientation and Interpersonal Assertiveness demonstrated a significant effect on both Sexual Behaviour and Condom Use.

Goal Orientation

Goal Orientation is operationalized as the skill of being able to set reasonable goals and strive for them. In this study Goal Orientation emerged as a negative predictor of Sexual Behaviour, and a positive predictor of Condom Use. With respect to Sexual Behaviour, in this study Goal Orientation predicted greater frequency of

sexual behaviours. While this relationship may be opposite to what may be intuitively expected, it may be that those individuals who are strongly goal oriented may also set goals for maintaining long term meaningful and mutually satisfying relationships. Thus, sexual activity may be readily available (a partner is more available and willing). Analysis of Goal Orientation in relation to short versus long term relationships, may provide further explanation for the relationship between Goal Orientation and increased frequency of sexual behaviours. The benefit of goal setting skills to sexual health is intriguing and worth further study.

In this study, Goal Orientation positively predicted Condom Use. Thus, it would appear from this data, that individuals who are goal oriented, are also likely to be future oriented; and, thus more apt to protect themselves from sexual hazard. While this makes intuitive sense, the previously mentioned negative relationship between Goal Orientation and Sexual Behaviour, confounds the present positive relationship between Goal Orientation and Condom Use. It seems goal oriented participants engage in sexual behaviours more often and use condoms more often. If, as argued, goal oriented individuals are involved in long term relationships; and further, couples

in long term monogamous relationships are less apt to use condoms, why does Goal Orientation positively predict Condom Use? A possible explanation may be the wording of the questions for condom use. Specifically, one question which loaded on the goal setting index was "I know how to use a condom properly". It may be that despite long term monogamy, individuals scoring high in Goal Orientation, were also those using condoms to prevent pregnancy. In other words, this question may positively skew the Goal Orientation scores. Recall that of the 18 women using condoms in long term relationships, 15 did not do so to protect from HIV/AIDS, but to protect from pregnancy. Whether these results are indicative of HIV/AIDS protective behaviours is questionable. Further statistical analysis is necessary to unravel what appears to be equivocal results.

Interpersonal Assertiveness

Interpersonal Assertiveness positively predicted all of the intervening variables of the BCI. The relationship of Interpersonal Assertiveness to all of the intervening variables may support the assertion that the Behavioural Orientation variables; Behavioural Intentions, Attitudes of Sexual Responsibility and Self-

Efficacy, be treated as independent variables. Interpersonal Assertiveness, the ability to take action on convictions, seems to be very similar to Self-Efficacy, individuals' confidence that they can achieve a desired goal. Similarly, Interpersonal Assertiveness shares common themes with Attitudes of Sexual Responsibility and Behavioural Intentions. A full factor analysis of all independent and intervening variables, and analysis among categories of variables, may be necessary to determine how these variables relate. Results from this study suggest a rationale for such an analysis.

Social Contexts

Social Contexts include Parent Norms, Peer Norms, Media Influence and Perceptions of Peer Norms Regarding Condom Use. Media Influence did not factor load on any of the categories; and, thus was removed from regression analysis. Parent Norms, Peer Norms and Perceptions of Peer Norms Regarding Condom Use had significant direct effects on both Sexual Behaviour and Condom Use.

Parent Norms

Parent Norms refers to individuals' perceptions that their parents approve of their sexual behaviours. Parent

Norms directly predict Sexual Behaviour, but do not predict Condom Use. Parent Norms supporting conservative or more restrictive sexual behaviours (abstinence or monogamy) predict less frequent sex, whereas parent norms which are either accepting or approving of sexual behaviours, predict more frequent sex. While other literature has suggested the importance of assessing parental influence on young people's sexual behaviours, few studies have attempted to quantify the effect (Atwood, 1992; Hovell et al., 1994). The strong predictive value of Parent Norms identified in this study seems to imply that Parent Norms should be included in the BCI as a determinant of Sexual Behaviours. Further research is needed to determine the relationships between factors which may contribute to the development of norms, such as Parent Relationships, Religiosity and Self Esteem (Personal Contexts) on Parent Norms and consequent Sexual Behaviours.

No relationship was found between Parent Norms and Condom Use. Parental approval of sexual behaviour does not predict use of condoms for those individuals who are sexually active.

Peer Norms

The construct Peer Norms refers to individuals' perceptions of peers' attitudes of appropriate and acceptable behaviour. Peer Norms positively predicts both frequency of sexual behaviour and use of condoms. If an individual perceives peers' attitudes to be supportive of safe sexual practices, that individual is likely to engage less frequently in risky sexual behaviours and is likely to use condoms more often. Likewise, peer norms that are perceived as supporting risky sexual behaviours tend to predict higher frequency of risky sexual behaviours and less condom use. These results may reflect the need of individuals to be accepted by their peer group. It seems therefore, that Peer Norms is a strong determinant of sexual behaviours. Further research is required to determine factors which may influence the development of individual perceptions of peer norms, including Personal Contexts such as Self-Esteem, Peer Relationships, Parental Relationships and Religiosity. In addition, further study regarding the interaction between Peer Norms and other direct determinants of sexual behaviours, (including Self-Efficacy, Interpersonal Assertiveness, and Behavioural

Intentions) may further explain the impact of Peer Norms on Sexual Behaviours and Condom Use. The results from this data are consistent with extant research (DiClemente, 1992; Hovell et al., 1994) identifying the importance of peer norms in assessments of sexual behaviours and in designing HIV/AIDS interventions.

Perceptions of Peer Norms Regarding Condom Use

Perceptions of Peer Norms Regarding Condom Use is a construct which emerged through factor analysis as a sub-category of Social Contexts. The construct refers to individuals' perceptions of peers' attitudes towards condom use. Both dependent variables, Sexual Behaviour and Condom Use were positively predicted by Perceptions of Peer Norms Regarding Condom Use. If individuals perceive peers' attitudes to be approving of condom use, they are more likely to limit risky sexual behaviours and to use condoms during sexual encounters. This relationship may explain the direct positive influence of Perceptions of Peer Norms Regarding Condom Use on the Behavioural Orientation variable, Attitudes of Sexual Responsibility. Consistent with other research (DiClemente, 1992; Michaud & Hausser, 1992), this data suggests that individuals' perceptions of normative

behaviour will predict attitudes towards sexual responsibility and actual sexual behaviours including both frequency of sex and condom use. While this relationship seems to be "common sense", its importance should not be minimized. Interventions specifically stressing peer support of condom use in addition to general peer support of sexual behaviour, may increase individual AIDS/HIV risk prevention behaviours.

Personal Contexts

Of the Personal Contexts constructs, only one of the sub-categories, Peer Relationships, predicted a direct effect on Sexual Behaviour. None of the Personal Context constructs demonstrated a direct effect on Condom Use.

Peer Relationships

The Personal Contexts construct, Peer Relationships, refers to individuals' perceptions of their relationships with their peers and had a direct negative effect on Sexual Behaviour. Those individuals believing they had strong relationships with their peers were more likely to engage in greater frequency of sex. To explain this relationship fully, it may be necessary to determine the relationship between individuals' perceptions of peer relationships and their perceptions of peer normative

behaviour. If they perceived frequent sexual behaviour to be accepted by peers and felt they had a good relationship with their peers, they would be likely to engage in greater frequency of sexual behaviours. Greater frequency of sexual behaviours predicted from strong peer relationships may also be a result of long term and monogamous relationships. Those involved in these long term relationships may have strong relationships with their peer group. This relationship warrants further analysis.

Variables with No Effect

The direct influence of independent variables on Sexual Behaviour both lends support to the BCI as well as suggests areas for revision and further research. Equally interesting, and also relevant are the two BCI variables, Knowledge and Personal Contexts, which did not emerge as predictive of the dependent variables in this study. These two variables are discussed below.

Knowledge

When regressed against the dependent variables, Sexual Behaviour and Condom Use, Knowledge has virtually no predictive effect. Knowledge of STD does have a very small predictive effect on Sexual Behaviour (explaining less than 1% of the variance), but Knowledge of HIV/AIDS

transmission, symptoms and prevention had no effect on Sexual Behaviour. Knowledge of HIV/AIDS prevention, transmission and other STD's did predict the intervening variables of Self-Efficacy and Attitudes of Sexual Responsibility, but in a negative direction. This suggests that greater knowledge in these areas predicts lower sexual responsibility and lower self-efficacy. This confusing result is contrary to expectations and is difficult to explain. Research regarding self-efficacy in other areas of behavioural change, seems to indicate that self-efficacy is often low in the initial stages of a behavioural change, but increases with increments of success towards the desired behavioural goal (Borrelli & Mermelstein, 1994; Stuart, Borlan & McMurray, 1994). Similar to these other areas of behavioural change, self-efficacy regarding positive sexual behaviours could be low in a young, less experienced population, regardless of knowledge. In addition, greater knowledge of HIV/AIDS and STD, possibly, results in perceptions of fear or helplessness in a young individuals' beliefs about their sexual health. It is possible that sexuality education programs may focus on knowledge at the expense of self-efficacy. Perceptions of fatalism may not be addressed in purely knowledge focused interventions. If this is the

case, a more systemic approach to interventions, that incorporates aspects of Knowledge, Skills, Personal Contexts, Social Contexts and Environment, is strongly supported.

The negative relationship between Knowledge and Attitudes of Sexual Responsibility is confusing. However, if individuals do not perceive themselves at risk, their attitudes may appear to be irresponsible. In this case, their attitudes may be more a factor of their perceptions of risk than a factor of their knowledge. Again, the ambiguous nature of Attitudes of Sexual Responsibility as an intervening variable is obvious. Attitudes are personal and difficult to assess as negative or positive. This construct may be better analyzed as a categorical variable, rather than a numerical variable. Items such as "Sex without love is not satisfying" or "Unmarried people should not have sex", are difficult to objectively quantify. If a participant strongly agrees with either of the above statements, are they given a high scale score or a low scale score? Further factor analysis and research of this variable is necessary.

It should be noted that fewer than 50% of respondents had taken a university course on sexuality. If knowledge of HIV/AIDS is primarily a result of media

or the result of education programs that were based in factual information with no personal relevance, misconceptions are possible (Mertens et al., 1995; St. Lawrence, 1993). Therefore, regardless of knowledge, attitudes towards sexual behaviour and recognition of risks may be distorted.

Personal Contexts

As mentioned previously, the only Personal Context construct demonstrating a direct effect was Peer Relationships. The remainder of the Personal Contexts variables including Self-Esteem, Religiosity, Parent Relationships and Perception of Risk, had no direct effect on either of the dependent variables, Sexual Behaviour or Condom Use.

Self-Esteem

Self-Esteem refers to individuals' respect and opinion of themselves. This construct has no effect on any variable of the BCI in this study. Individuals' perceptions of self apparently does not effect condom use nor frequency of sexual behaviours, either directly or indirectly. This result seems surprising since self-esteem intuitively should be a prerequisite of self-efficacy. In fact the two constructs are positively

correlated (see Appendix C). Stepwise regression analysis measures relative influence of multiple factors and presumably there are many other more salient predictors of self-efficacy and sexual behaviours than self-esteem.

Stepwise regression analysis may also explain the absence of relationships among other personal contexts including, Mental Health, Student Achievement or Socio-Economic Status with Sexual Behaviours. These variables may have a small effect, however the predictive value is weak and loadings were not significant.

Perceptions of Risk

Perceptions of Risk measures individuals' perceived risk of contracting HIV/AIDS or other STD. This independent variable did not predict any of the intervening nor dependent variables. In fact, this variable did not correlate significantly with any intervening variables nor dependent variables (see Appendix C). It would seem from this study that perception of risk is not a factor in predicting sexual behaviours. This finding is contrary to the literature (Gerrard & Warner, 1994). Obviously further research on this variable is required. One possible explanation may

be the number of individuals who indicated they were in long-term monogamous relationships or not currently sexually active. Because a fairly large percentage of the sample were in monogamous relationships or were not presently sexually active, perceptions of risk for the total participant population may have been very low; thus, not allowing for an accurate assessment of sexually active individuals' perceptions of risk. Further study, selecting for sexually active individuals and separating long-term monogamous versus short-term or polygamous relationships may produce very different results. This again, provides an avenue for further analysis of this data.

Summary and Implications for Revisions to the BCI

As a pilot project, the purpose of this study was to test the BCI model as a framework to guide future research and HIV/AIDS prevention. The results of this study indicate that the BCI holds promise as a strong theoretical framework for future research and interventions. The present study was designed to test relationships between the independent, intervening and dependent variables. While the methods of data analysis for this study identified the most significant one way

relationships between the independent, intervening and dependent variables, it became evident that a great deal more analysis may be completed on this data to better define and operationalize the constructs, and to determine interactions between and within the variables. The following is a summary of the results highlighting the most important findings and suggesting revisions to the BCI for future testing.

Variables with no direct effect:

Foundations of Attitudes

As described in the previous section, a number of variables did not seem to have direct effect on behavioural outcomes, but did seem to influence other variables which in turn became determinants of sexual behaviours. These variables may contribute to the development of attitudes and skills which in turn predict sexual behaviours. These variables include Knowledge, Religiosity, Parent Relationships and Media Influences.

Knowledge of HIV/AIDS/STD was very limited as a predictor of sexual behaviour. As indicated in much of the extant literature, knowledge is precursory to any behavioural change, but, when considered alone, does not predict behaviour (DiClemente, 1991; Mertens et al., 1995; Prochaska, Redding et al., 1994). While knowledge

likely builds the foundation for learning skills, identifying risks, and developing norms and attitudes towards sexuality issues, other factors seem to intervene between knowledge and actual sexual behaviour. Knowledge therefore may be the basis upon which the significant predictors of behaviour are constructed. In the BCI, it seems knowledge may need to be considered as a foundation to the development of predictor variables.

Personal contexts including Religiosity and Parent Relationships may also be foundations upon which significant predictors of behaviour are constructed. Although Media Influences did not tend to load as a significant predictor of any variables in this study, research indicates media is a strong predictor of sexual attitudes and perceptions of normative societal behaviour and actual behaviour. Therefore, it will be included in the modified BCI and warrants further testing.

Independent Variables: Determinants of Sexual Behaviour

One of the strongest implications of this study suggests re-examination of Behavioural Orientation and its sub-categories as dependent rather than intervening variables. Self-Efficacy as an intervening variable did not predict Condom Use and predicted Sexual Behaviour only weakly. This may be a result of the similarity

between Self-Efficacy and Self Esteem. Self-Efficacy may be a skill and a determinant of sexual behaviour rather than an intervening variable. As a skill, Self-Efficacy could be tested as an independent variable, contributing to sexual behaviour either directly or indirectly.

Attitudes of Sexual Responsibility is also ambiguous as an intervening variable. As with Self-Efficacy, Attitudes of Sexual Responsibility did not predict Condom Use and predicted Sexual Behaviour negatively. Treating this variable as a skill that can be learned and a determinant of sexual behaviour may facilitate future analysis and better explain its relationship to actual sexual behaviours. As mentioned previously, Attitudes of Sexual Responsibility is also difficult to quantify as a numerical scale. Further analysis of this variable and its scale items is necessary.

Behavioural Intentions, do predict both Sexual Behaviour and Condom Use. While these relationships are strong, very few variables strongly predict Behavioural Intentions. In most cases, Behavioural Intentions acts more as an independent variable than as an intervening variable. Thus, considering Behavioural Intentions as a determinant of Sexual Behaviour which is influenced by a number of foundational variables, may provide greater

understanding of its relationship to actual sexual behaviour. While Behavioural Intentions may influence behaviours, it is important to recognize that intentions do not equal behaviour (Richard et al., 1995).

It seems therefore, that the three sub-categories of the behavioural orientation component of the BCI do not act as intervening variables as originally proposed by King & Wright (1993). Rather, each of these variables may fit better as independent variables or determinants of sexual behaviour. To determine the fit of these variables into the model, further regression analysis is required.

Additional variables which had direct effects on the dependent variable include Skills (Interpersonal Assertiveness, Decision Making and Goal Orientation), Social Contexts (Peer Norms, Parent Norms and Perceptions of Peer Norms Regarding Condom Use) and Personal Contexts (Self-Esteem). These variables may also be included in the modified BCI as determinants of sexual behaviour.

The Intervening Variable: Environment

While the constructs comprising Behavioural Orientation in the original BCI did not seem to load as intervening variables, an independent variable, Environment - Substance Use, was a strong predictor of

Sexual Behaviour. The fact that Substance Use accounted for 25% of the variance in sexual behaviours underlines its importance as a predictor variable. This finding is consistent with findings in other studies that have also linked consumption of alcohol with an increase in risky sexual behaviour (DiClemente, 1992; Grimely et al., 1995). Substance Use was a very strong predictor of Sexual Behaviour. Further, Substance Use strongly predicted, and presumable is strongly predicted by, the three sub-categories of Behavioural Orientation. It may therefore be beneficial to consider environmental contexts as an intervening variable between predictors of sexual behaviour and the sexual behaviour itself.

Summary

In summary, the data analysis presented in this pilot project suggests revisions to the original BCI model. Specifically, four variables comprise the "Foundations of Attitudes" component, including Knowledge, Religiosity, Relationship to Parents, and Media Influences. These variables may effect the development of determinants of sexual behaviours. The "Determinants of Sexual Behaviour" including Peer Norms, Peer Norms Regarding Condom Use, Parent Norms, Self-Esteem, Self-Efficacy, Attitudes of Sexual Responsibility

and Behavioural Intentions are then filtered through Environmental Contexts which acts as the "intervening variable". Finally the "outcome" or "dependent" variables include Sexual Behaviour (frequency of sex) and Condom Use (HIV/AIDS preventive behaviours). The modified BCI is depicted in Fig.6.1.

Implications for Intervention

Based on this study, a number of recommendations may be suggested for intervention programs. These suggestions are specific to a university population characteristic of the sample used in this project. Further elucidation research with non-university populations would be necessary to generalize the results and suggestions to other populations.

The results of the study highlight the importance of basing HIV/AIDS prevention programs from an empirically sound theoretical framework. Consistent with the suggestions of other researchers in the field (Fisher & Fisher, 1992; Kirby et al., 1994; Oakley et al., 1995) the results from this study support the need to complete pilot projects on target populations in order to determine salient predictors of sexual behaviours and identify appropriate issues for presentation in prevention programs. Without such elucidation research,

variables assumed to be salient may have little actual effect in developing risk reduction behaviours. The present pilot project identified factors which require greater attention in preventive programs than may have otherwise been expected. The modified BCI may therefore provide a framework for prevention programs which focus on issues salient to the development of risk reduction behaviours for university students.

The greatest benefit of the modified BCI is the identification of multiple factors which influence sexual behaviours. In addition, the results from this pilot project following the BCI, specify the importance of planning prevention programs in logical order, building on factors which are foundations to the formation of attitudes and behaviours.

The specific factors identified by the Modified BCI for consideration in prevention program planning include knowledge acquisition, skills development, personal, social and environmental contexts. While some of these factors emerged as more salient predictors of risk reduction behaviour than others, each must be included in prevention efforts. The following paragraphs will outline specific considerations for the planning of prevention programs.

Intervention programs for university students must consider the very limited direct predictive effects of knowledge on sexual behaviour. Consistent with previous literature (DiClemente, 1992; Kirby et al., 1994), the present results suggest that programs focused exclusively on the dissemination of information may be ineffective in altering high risk sexual behaviour. Knowledge may however contribute to the development of attitudes and skills. Information presented instrumentally in prevention programs must focus on providing knowledge precursory to the development of motivations and skills necessary for altering high risk behaviour. Topics presented to increase knowledge may include transmission of HIV/AIDS, risky versus safe sexual practices and information regarding other STD. Once a knowledge base has been established, the program focus may progress to the formation of behavioural goals, and the development of skills designed to meet those goals.

From the results of this study, it is apparent that instrumental teaching of information is not sufficient for altering risky behaviours. Personal contexts, social contexts and the environment must also be explored. Utilizing a facilitative programming format allowing for open communication and discussion, may provide a learning

environment conducive to exploring these salient factors which influence behaviour. For example, peer norms and peer norms regarding condom use emerged as important factors predicting sexual behaviours for university students. Allowing for open discussion of norms and attitudes towards sexual behaviours in general, and HIV/AIDS risk reduction behaviours specifically, may provide opportunity for students to be open and honest regarding attitudes towards sexual behaviours. Guided by facilitators emphasizing and reinforcing clear and appropriate values towards safe sexual practices, may allow students to establish group normative behaviour supportive of risk reduction. In addition, groups may be guided towards affirmative action in communicating safe sexual practices beyond the classroom to the greater society.

The strongest predictor of sexual behaviour in this study was environment, specifically substance use. Students more likely to use alcohol excessively were also more likely to engage in risky sexual behaviour. Prevention programs which consider the detrimental effects of substance use, as well as the development of skills to refuse or control substance consumption, may be

effective in reducing combined substance abuse and high risk sexual behaviours.

In the delivery of any HIV/AIDS prevention programs for the university population, it is essential that the numerous factors predicting high risk sexual behaviours be explored as a "big picture". That is, none of the factors influencing sexual behaviours or condom use occur in a vacuum. As described in the Modified BCI, the components interact, and build upon others. To present knowledge or skill development alone, without consideration of personal contexts, social contexts and the environment which influence behaviours, would likely be ineffective in altering risky sexual behaviours.

Researchers who have evaluated extant prevention programs, indicate programs must be ongoing and consistent to be effective (Choi & Coates, 1994; Kirby et al., 1994). Thus integrating the BCI with concepts from process of change models, considering each of the factors which influence behaviours over time, may provide an avenue for students to develop adaptations to environments and situations as they change. Identifying risk factors in the personal, social and environmental conditions in their lives may allow students to develop

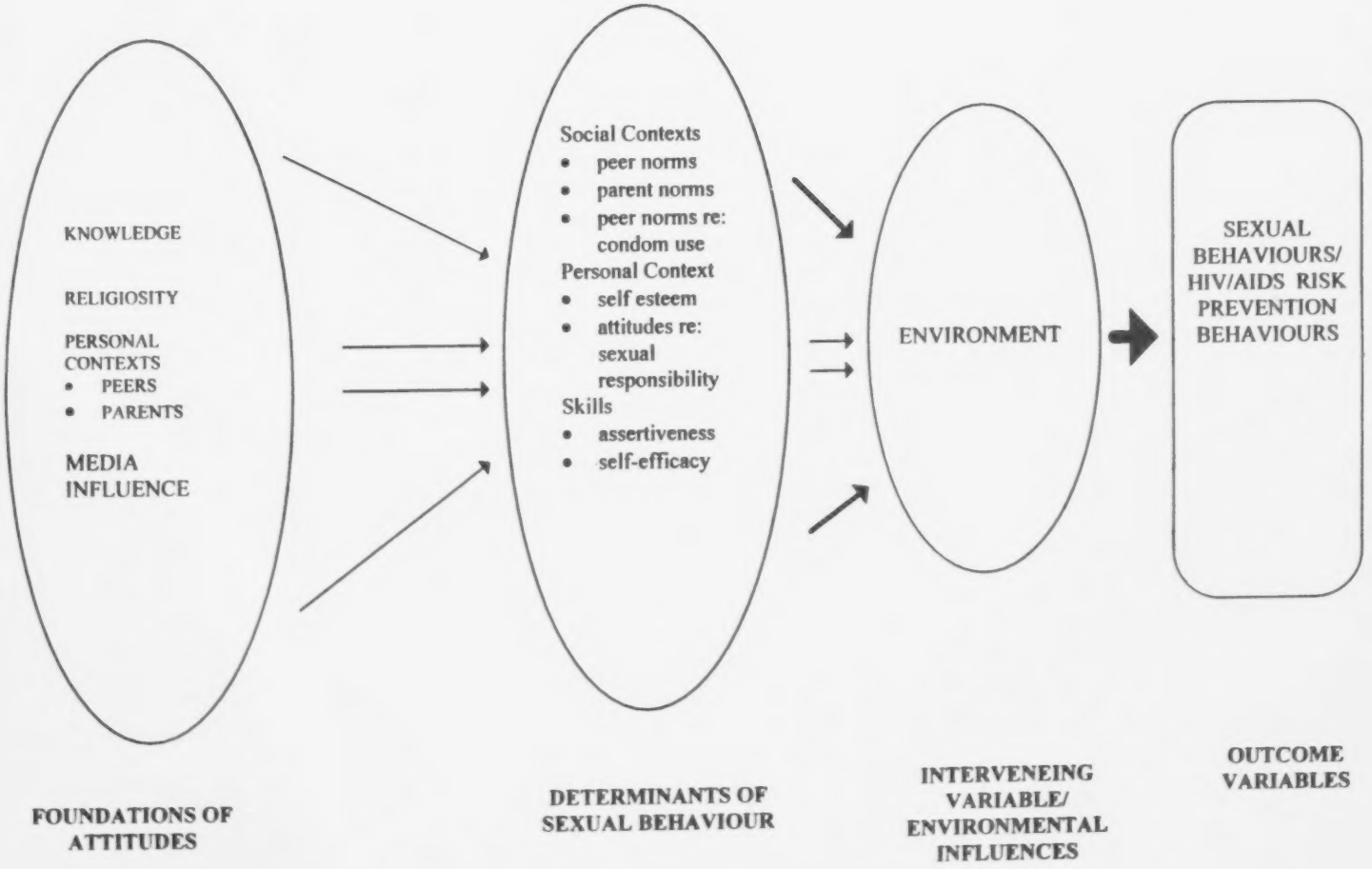
protective measures and skills to avoid risky sexual activity.

Finally, the results of this study suggest that the identification of target groups within the university population is important. While sexual activity is relatively high among this population, there remains a significant portion of the population who are not sexually active. Prevention programs must consider the needs of both groups of students. Knowledge acquisition and skill development may be necessary to encourage some to alter risky behaviours. For others, knowledge acquisition and skill development focused on maintaining safe sexual practices may be more salient. Innovative techniques such as focus groups, discussion groups and role playing may reinforce the positive behaviours of those who are not sexually active or are safely engaging in sexual activity. Similar techniques as well as the identification of positive role models may help to develop positive normative attitudes towards safe sexual practices.

While the implementation of prevention programs requires thorough planning, the results of this study suggest that two key factors are crucial. First, a strong theoretical foundation is necessary to guide the

program planning, implementation and evaluation. Secondly, sexual behaviours are influenced by many factors. The importance of considering each of these factors and the interacting effects of these factors is essential in the development of effective risk prevention programs. The Modified BCI presented in Figure 6.1 is proposed as a framework which identifies many influential factors which must be considered. The model emphasizes the need to consider these factors as a system.

FIGURE 6.1 : MODIFIED BEHAVIOURAL CHANGE INTERVENTIONS MODEL



CHAPTER VII: CONCLUSION AND IMPLICATIONS FOR FUTURE RESEARCH

The purpose of this thesis was to test the BCI model developed by King and Wright (1993) and determine its strength as a framework to guide both HIV/AIDS research and prevention for at risk youth. From the data analysis, both strengths and weaknesses of the model were identified, and revisions to the model were suggested.

The present study was a pilot project, and as such the results are not exhaustive. However, from the analysis, it seems a number of variables form the basis for attitudes regarding sexual behaviours. These include Knowledge, Parent Relationships, Media Influences and Religiosity. These foundational variables effect the development of determinants of sexual behaviour. The determinants of sexual behaviour include: Skills, such as Assertiveness, Self-Efficacy, Attitudes of Sexual Responsibility and Goal Setting; Personal Contexts of Self-Esteem; Social Contexts including Peer Norms, Parent Norms and Perceptions of Peer Norms regarding Condom Use; and Behavioural Intentions. The determinants of sexual behaviour, or the independent variables, are then filtered through Environmental Contexts, primarily

Substance Use towards predicting final Sexual and HIV/AIDS Risk Reduction Behaviours.

The present study was an initial step in analyzing the data collected for this pilot project to determine the effectiveness of the BCI as a framework for HIV/AIDS research and interventions. Further research is needed to determine relationships and interactions both among and within variables. Further research projects which may follow from the present study are described below.

This study selected for individuals who were not, and had never been in a permanent relationship. Other selection criteria of various groups and cohorts may further establish relationships among variables of the BCI. In many regressions, results may have been confounded by those who were not sexually active, or those who were currently in a longer term relationship. For these individuals, the risk of contracting HIV/AIDS or other STD is greatly reduced. Analysis of responses of those students who truly are engaged in high risk sexual activity may tease apart confusing results regarding perceptions of risk and subsequent condom use. This selection criteria may further suggest differences in Attitudes of Sexual Responsibility among individuals actively involved in at risk behavior and those not

sexually active, or sexually active with only one partner.

Another project could further select for males and females to reveal gender differences in many of the relationships between the variables presented in the BCI. Likewise, another project based on selection for age may also produce interesting and valuable results.

One of the strong relationships emerging from this study is the salience of environmental variables and particularly substance use, which accounts for 25% of the variance in sexual behavior. As mentioned in the body of the thesis, this large proportion of the variance explained by one variable suggests that environment may be more accurately conceptualized as an intervening variable. This relationship, as depicted in Figure 6.1 needs to be tested.

The positioning of the Substance Use variable is an important aspect of HIV/AIDS prevention programs. Effort, time and finances spent developing strong, foundational, comprehensive knowledge in addition to subsequent skills and attitudes conducive to proactive sexual behavior, may be of little effect unless environmental variables are considered in the program. At risk youth may need to develop skills and attitudes

which maintain their salience in different environmental situations (Richard et al et al., 1995; Grimely et al., 1995).

An interesting issue which emerges from the data is the possible direct correlation between number of sexual partners and self esteem. The existence of such a relationship may suggest that at risk populations value having multiple partners. Stated another way, at risk populations may have little desire to limit frequency of sex or number of sexual partners. Given this and the fact that only 13% of the participant population in this study consistently use condoms, the potential for exposure to HIV/AIDS and other STD increases enormously. The effectiveness of HIV/AIDS intervention programs may be increased with understanding and potential program planning that considers the possible link between self esteem and risky behaviour.

Finally, within this study, social desirability may have confounded the results. This is especially true when considering the Behavioural Intentions construct. Intentions are heavily influenced by social determinants of behaviour such as parents, peers, religion, and often, current norms of society. Intentions may not predict sexual behaviour as much as they reflect perceptions of

desired social norms. Further understanding of the relationship between intentions and sexual behaviour, and the formation of intentions toward sexual behaviour may assist in intervention planning to decrease risky sexual behaviour.

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APPENDICES

APPENDIX A

ITEMS TO TEST THE BCI MODEL

APPENDIX A: ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Components	Sub-Components	Items/Scale	Key
Knowledge	HIV Symptoms and testing (k_symp)	• AZT (azidothymidine) is a cure for AIDS.	1
		• There are blood tests that show if a person has been infected with HIV.	1
		• A person can have HIV for ten or more years without having signs of illness.	1
		• A person can be infected with HIV for up to six months before its presence can be detected.	1
		• HIV weakens the immune system by destroying red blood cells.	1
		• AIDS is the leading cause of death among Candians under age 25.	1
		• When a person has AIDS, his or her body cannot defend itself from opportunistic infections.	1
		• Most people who are infected with HIV have AIDS.	

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Knowledge (cont'd)	HIV Trnsmission (k_trans)	• The AIDS virus can be spread through hugging.	1
		• The AIDS virus can be spread from a female to her unborn child during pregnancy.	1
		• When a person shares drug needles, he or she is at risk of catching the AIDS virus.	1
		• The AIDS virus may be spread from a female to a male during sexual intercourse.	1
		• Having many sexual partners increases a person's risk of catching the AIDS virus.	1
		• Homosexual females and males are equally at risk of catching the AIDS virus.	1
		• All homosexual men carry the AIDS virus.	1
		• Ear piercing is a possible way of becoming infected with the AIDS virus.	1
		• In Canada, there is an extremely small risk of being infected with HIV by having a blood transfusion.	1
		• If a person has a sexually transmitted disease, his or her chances of being infected with HIV are increased.	

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Knowledge (cont'd)	Individual HIV prevention (k_preven)	• Condoms used with a spermicidal foam or gel give effective protection from the AIDS virus.	1
		• Vaseline is a good lubricant to use with a condom.	1
		• Abstaining from sexual intercourse is one of the most effective ways to avoid being infected with HIV.	1
		• A condom, when used properly, provides 100 percent protection against sexually transmitted diseases.	1
		• A vaccine is available to protect people from HIV infection.	1
		• There are drugs available that can prolong the lives of some people living with AIDS.	1
	Other STD (k_std)	• Although chlamydia is the most common STD, it does not lead to serious problems.	1
		• STD can make both females and males unable to have children.	1
		• Many people who have STD will not have signs of illness.	1
		• Men and women are equally likely to have serious problems if they catch an STD.	1

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Knowledge (cont'd)	Other STD (cont'd)	• You can tell if a person has an STD by his or her looks.	1
		• Many people who have STD do not know that they have them.	1
		• You can get the same sexually transmitted disease more than once.	1
		• Sexually transmitted diseases among teenagers are rare.	1
		• STD can be caught from toilet seats.	1
		• A person can get genital herpes from oral sex.	1
		• Taking birth control pills will protect a female from STD such as gonorrhea and syphilus.	1
Skills	Inter-personal assertive ness (s_assert)	• I would stop a friend from driving if I thought they had had too much to drink.	2
		• When I have to make an important decision I get as much information as possible before making the decision.	2
		• When all the people I am socializing with are planning to drink to excess, I decide to be the designated driver.	2

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Skills (cont'd)	Interprsonal assertivness (cont'd)	• You are at a party where some of your friends are drinking. They are pressuring you to drink. If you didn't want to drink, how confident are you that you could refuse?	4
	Inter-personal commun-ication (s_commun)	• When I am talking with another person about something important I ask questions when I do not understand.	2
		• When I am talking with another person about something important I ask for a reaction to what I have said.	2
		• When I am talking with another person about something important I indicate that I respect the other person's point of view.	2
		• When I have to make an important decision I think about the advantages and disadvatages of each possible choice.	2
	Cognitive/ Practical (s_cogpra)	• I usually give in.	2
		• I have often felt manipulated into doing something I did not want to do.	2

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Skills (cont'd)	Cognitive/ Practical (cont'd)	• I can set realistic goals for myself.	2
		• I feel I could use a condom properly.	2
Personal Contexts	Self Esteem (pc_slfest)	• I am often sorry for the things I do.	2
		• I have confidence in myself.	2
		• I like myself.	2
		• I often wish I were someone else.	2
		• I would change how I look if I could.	2
		• I often feel left out of things.	2
	Mental Health (pc_mntlh)	• I have trouble making decisions.	2
		• I am a happy person.	2
		• I often can't sleep without worrying about things.	2
		• I often feel lonely.	2
		• I often get frustrated.	2
		• I often feel depressed.	2
		• I sometimes have thoughts of committing suicide.	2
		• Life is just one worry after another.	2
		• The future looks good to me.	2
		• No one cares much what happens to me.	

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Personal Contexts (cont'd)	Student Achievement (pc_stach)	• What was your average mark last semester?	NA
		• In your opinion, what do your professors/instructors think about your work in University?	19
	Religiosity (pc_relig)	• How frequently have you gone to church or other religious institutions (e.g., synagogue) in the past 12 months.	15
		• How important is religion in your life?	16
		• How often do you pray?	
		• How often do you read sacred writings?	
		• What does your church or belief system teach about sex?	
	SES (pc_ses)	• What is the highest level of education completed by your father?	17
		• What is the highest level of education completed by your mother?	
		• What is the occupation of your father?	17
		• What is the occupation of your mother?	

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Components	Sub-Components	Items/Scale	Key
Personal Contexts (cont'd)	Social Integration /Peer Relation-ships (pc_peer)	• I have a lot of friends.	2
		• I am too shy to make a lot of friends.	2
		• My friends often ask for help and advice.	2
		• I discuss my problems with friends.	2
		• If I have a problem I usually keep it to myself.	2
		• I talk about sex with my close friends.	2
		• I am embarrassed when I am with someone of the opposite sex.	2
		• People of the opposite sex seem to like me.	2
		• It is easy for me to make new friends.	2
		• When I'm feeling down I turn to my friends to help me feel better.	2
		• I meet with friends before, during and after school most days.	2
		• What my friends think of me is important.	

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Personal Contexts (cont'd)	Parent Relation-ships (pc_prnt)	• My parents understand me.	2
		• What my parent(s) or guardian(s) think of me is important.	2
		• I would raise my children differently from the way I was raised.	2
		• My parent(s) expect too much of me.	2
		• I ask at least one of my parents or guardians for advice on serious matters.	2
		• My parent(s) trust me.	2
Social Contexts	Attitudes	• I am worried about getting AIDS.	2
		• I worry about getting an STD.	2
		• Fear of AIDS is preventing me from having sex.	2
	Norms (Peers) (sc_peern)	• My friends and I help each other aviod taking unnecessary risks.	2
		• My friends would support me if I decided not to have sex until I was ready.	2
		• To keep your friends you have to go along with most things your friends want to do.	2

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Social Contexts (cont'd)	Peer Norms Regarding Condom Use (sc_cndom)	• My friends feel that using a condom would spoil the enjoyment of sex.	2
		• Most of my friends think a person should always use a condom when having sex.	2
		• About how many of your friends use a condom when they have sex?	5
		• About how may of your friends believe that teenagers should use a condom if they have sex?	5
	Norms (Parents) (sc_prnt)	• It would bother my parent(s) to know I was having sex.	2
		• My parent(s) think that sex before marriage is wrong.	2
Physical Environ-ment	Substance Use (e_subst)	• How often do you use alcohol?	11
		• Have you ever had so much alcohol that you were really drunk?	12
		• How much alcohol do you usually drink at one time?	13
		• How many cigarettes do you usually smoke in one day?	

ITEMS TO TEST BCI MODEL

BCI Model: Independent Variables			
Main Component	Sub-Components	Items/Scale	Key
Physical Environment (cont'd)	Locus (e_locus)	• Where do you spend most of your free time during the school term?	6
		• Thinking of a typical week during the school period (say last week), how much of your free time did you spend on each of the following activities: 1. reading newpapers, magazines or books (non-school) 2. listening to radio 3. watching TV or videos 4. going to parties or dancing 5. participating in athletic activities, sports, games 6. helping parents at home 7. dating or going out with a boyfriend or a girlfriend 8. hanging around with friends 9. going to church worshipping 10. going to the pub or bar 11. other?	7

ITEMS TO TEST BCI MODEL

BCI Model: Intermedial Variables			
Main Component	Sub-Components	Items/Scale	Key
Behaviour-al Orientatn	Intentions (bo_inten)	• I would tell a person I really cared just to have sex.	2
		• I expect to have casual sex in the future.	2
		• For the rest of my life, I intend to have sex with only one partner.	2
		• I plan to wait until I get married to have sexual intercourse.	2
	Sexuality Attitudes (bo_sexat)	• Making sure a condom is available is the responsibility of both partners.	2
		• Unmarried people should not have sex.	2
		• Sex before marriage is OK if you are in love.	2
		• If people think they might have sex during a date, they should carry a condom.	2
	Self Efficacy (bo_slfef)	• I would be able to ask my partner about their past sexual experiences.	2
		• I would be able to resist being persuaded by a friend who was trying to get me to do something I didn't want to do.	2

ITEMS TO TEST BCI MODEL

BCI Model: Intermidial Variables

Main Component	Sub-Components	Items/Scale	Key
Behaviour-al Orientatn (cont'd)	Self-Efficacy (cont'd)	• I can keep myself from getting AIDS.	2
		• You have recently broken up with your boy/girlfriend. You start to date someone new who knows you have had sex and wants to have sex with you. If you didn't want to have sex with your new partner, how confident are you that you could refuse?	3
		• If my partner wanted to have sexual intercourse before I was ready, I would refuse.	2

BCI Model: Dependent Variables

Main Component	Sub-Components	Items/Scale	Key
Sexual Behaviours HIV/STD Risk Prevention Behaviour	Sexual Behaviours (sb_sb)	• How often have yhou had the following experiences:	18
		1. Deep (open mouth) kissing	
		2. Petting above the waist	
		3. Petting below the waist	
		4. Oral sex	
		5. Sexual intercourse - vaginal sex	
		• With how many people have you had vaginal sex? (Oral Sex)	

BCI Model: Dependent Variables			
Main Component	Sub-Components	Items/Scale	Key
Sexual Behaviours HIV/STD Risk Prevention Behaviour (cont'd)	Condom Use (sb_cndom)	• When you had sexual intercourse, how often was a condom used?	8
		• Did you use a condom the last time you had sexual intercourse?	9

KEYS

Key 1

1 = Yes

2 = No

3 = Don't know

Key 2

1 = Strongly agree

2 = Agree

3 = Undecided

4 = Disagree

5 = Strongly Disagree

Key 3

1 = Very Confident

2 = Somewhat confident

3 = Not very confident

4 = Not at all confident

Key 4

1 = All

2 = Most

3 = Some

4 = None

Key 5

1 = All

2 = Most

3 = Some

4 = None

5 = No friends have had sex

Key 6

1 = At own house

2 = At relative's house

3 = At friend's house

4 = In the neighborhood

5 = In father's or mother's place of work

6 = At youth/sports club

7 = In video arcades

8 = At the mall

9 = At restaurant/coffee shop

Key 7

1 = None of my time

2 = Little of my time

3 = Some of my time

4 = Most of my time

Key 8

1 = Always

2 = Most of the time

3 = Sometimes

4 = Occasionally

5 = Never

Key 9

1 = Yes

2 = No

Key 10

1 = Did not have a condom

2 = Did not know how to use a condom

3 = Have a faithful (safe) partner

4 = Did not trust a condom

5 = Safe time of the month

6 = Had too much to drink

7 = Not able to ask partner to use one
8 = Did not want to show distrust of partner
9 = I am (my partner is) on the pill

Key 11
1 = Never
2 = On special Occasions
3 = About once a month
4 = 2-3 times a month
5 = Once a week
6 = 2-3 times a week
7 = Every day

Key 12
1 = Never
2 = Once
3 = 2-3 times
4 = 4-10 times
5 = More than 10 times

Key 13
1 = None
2 = 1-2 drinks
3 = 3-4 drinks
4 = 5 or more drinks

Key 14
1 = Heterosexual
2 = Homosexual
3 = Bisexual

Key 15
1 = Usually every week
2 = About once a week
3 = On special occasions
4 = Never

Key 16
1 = Very important
2 = Somewhat important
3 = Not important

Key 17
1 = Elem. school or less
2 = Some secondary school
3 = Graduated secondary
4 = Graduated college
5 = Graduated University
6 = Uncertain
7 = Other

Key 18
1 = Never
2 = Once
3 = A few times
4 = Often

Key 19
1 = Very good
2 = Good
3 = Average
4 = Below Average

APPENDIX B

FACTOR LOADINGS FOR ITEMS COMPRISING COMPONENTS OF THE BCI AS TESTED IN THIS STUDY

Varimax Factor Loadings for Items of
Sexual Behaviors/HIV/Aids Preventive Behaviors

Questionnaire Item	Factor 1	Factor 2
C40	0.87651	
C41	0.88847	
C42	0.88951	
C43	0.82595	
C44	0.81341	
C48	0.59197	
C50	0.59250	
C51		0.50010
C52		0.46408

Varimax Factor Loadings for Items of Skills

Questionnaire Items	Factor 1	Factor 2	Factor 3
A117	0.68963		
A118	0.68715		
A119	0.70823		
A120		0.70477	
B1		0.51339	
B2		0.71649	
B3	0.62786		
B5			0.51852
B6			0.56662
B75			0.52341
B8			0.62066
C1		0.57930	

Varimax Factor Loadings for Items of Personal Contexts

Questionnaire Items	Factor 1	Factor 2	Factor 3
A18			0.76598
A19			0.79904
A22	0.81360		
A23	0.87410		
A26	0.82528		
A27	0.81439		
A28	0.69198		
A38		0.69741	
A39		0.74758	
A40		0.58693	
A41		0.66430	

Varimax Factor Loadings for Items of Social Contexts

Questionnaire Items	Factor 1	Factor 2	Factor 3	Factor 4
B50			0.78888	
B52			0.83384	
B53			0.64307	
B57	0.59072			
B58				0.68542
B61				0.67609
B65	0.62376			
B66	0.58127			
B68		0.64180		
B70		0.70877		
C6				0.66255
C8				0.66822

Varimax Factor Loadings for Items of Behavioural Orientation

Questionnaire Items	Factor 1	Factor 2	Factor 3
B82	0.60399		
B83		0.60539	
B90		0.53217	
B93		0.65170	
B95		0.62871	
B96			0.53001
B97			0.55662
B98			0.62567
B106			0.61494
B107	0.50209		
B108	0.57333		
B115	0.51642		
B118	0.65274		
B119	0.60232		

APPENDIX C

CORRELATION COEFFICIENTS

- - Correlation Coefficients - -

	BO_INTEN	BO_SEXAT	BO_SLFEF	E_LOCUS	E_SUBST	K_PREVEN	K_STD	K_SYMP	K_TRANS
BO_INTEN	1.0000	-.4477	.2737	.1903	.5759	.1822	.0919	.0800	-.0578
	(492)	(490)	(492)	(474)	(476)	(492)	(492)	(492)	(492)
	P= .	P= .000	P= .000	P= .000	P= .000	P= .000	P= .042	P= .076	P= .201
BO_SEXAT	-.4477	1.0000	.1217	-.0694	-.3473	-.2886	-.2580	-.1532	-.0005
	(490)	(490)	(490)	(474)	(476)	(490)	(490)	(490)	(490)
	P= .000	P= .	P= .007	P= .131	P= .000	P= .000	P= .000	P= .001	P= .991
BO_SLFEF	.2737	.1217	1.0000	.1457	.1696	-.1159	-.1160	-.0901	-.1501
	(492)	(490)	(493)	(475)	(477)	(493)	(493)	(493)	(493)
	P= .000	P= .007	P= .	P= .001	P= .000	P= .010	P= .010	P= .046	P= .001
E_LOCUS	.1903	-.0694	.1457	1.0000	.2009	.0871	.0255	-.0411	.0154
	(474)	(474)	(475)	(480)	(480)	(477)	(477)	(477)	(477)
	P= .000	P= .131	P= .001	P= .	P= .000	P= .057	P= .578	P= .370	P= .737
E_SUBST	.5759	-.3473	.1696	.2009	1.0000	.2103	.1237	.0381	.0017
	(476)	(476)	(477)	(480)	(482)	(479)	(479)	(479)	(479)
	P= .000	P= .000	P= .000	P= .000	P= .	P= .000	P= .007	P= .406	P= .970
K_PREVEN	.1822	-.2886	-.1159	.0871	.2103	1.0000	.3998	.3050	.1503
	(492)	(490)	(493)	(477)	(479)	(508)	(506)	(508)	(508)
	P= .000	P= .000	P= .010	P= .057	P= .000	P= .	P= .000	P= .000	P= .001
K_STD	.0919	-.2580	-.1160	.0255	.1237	.3998	1.0000	.3428	.1280
	(492)	(490)	(493)	(477)	(479)	(506)	(506)	(506)	(506)
	P= .042	P= .000	P= .010	P= .578	P= .007	P= .000	P= .	P= .000	P= .004
K_SYMP	.0800	-.1532	-.0901	-.0411	.0381	.3050	.3428	1.0000	.1613
	(492)	(490)	(493)	(477)	(479)	(508)	(506)	(509)	(508)
	P= .076	P= .001	P= .046	P= .370	P= .406	P= .000	P= .000	P= .	P= .000
K_TRANS	-.0578	-.0005	-.1501	.0154	.0017	.1503	.1280	.1613	1.0000
	(492)	(490)	(493)	(477)	(479)	(508)	(506)	(508)	(508)
	P= .201	P= .991	P= .001	P= .737	P= .970	P= .001	P= .004	P= .000	P= .
PC_MNTLH	-.0185	.0540	.1945	.0390	.0165	-.1357	-.0700	-.1177	-.1023
	(492)	(490)	(493)	(479)	(481)	(500)	(500)	(500)	(500)
	P= .683	P= .233	P= .000	P= .394	P= .719	P= .002	P= .118	P= .008	P= .022
PC_PEER	-.1538	.2340	.1775	.0482	-.1992	-.1511	-.1055	-.1310	-.0572
	(492)	(490)	(493)	(479)	(481)	(500)	(500)	(500)	(500)
	P= .001	P= .000	P= .000	P= .292	P= .000	P= .001	P= .018	P= .003	P= .201
PC_PRNT	.1166	-.0269	.1931	.0139	.0432	.0210	.0355	-.0683	-.1109
	(492)	(490)	(493)	(479)	(481)	(500)	(500)	(500)	(500)
	P= .010	P= .553	P= .000	P= .762	P= .345	P= .639	P= .428	P= .127	P= .013
PC_RELIG	.3797	-.4270	.0607	.0780	.2369	.1171	.0285	-.0078	-.1026
	(491)	(489)	(492)	(480)	(481)	(507)	(505)	(508)	(507)
	P= .000	P= .000	P= .179	P= .088	P= .000	P= .008	P= .523	P= .861	P= .021
PC_SES	-.1155	.0403	.0142	-.0048	-.1895	-.0882	-.0371	-.0791	-.0275
	(491)	(489)	(492)	(479)	(481)	(507)	(505)	(508)	(507)
	P= .010	P= .374	P= .753	P= .916	P= .000	P= .047	P= .405	P= .075	P= .537
PC_SLFES	-.0839	.0815	.1849	.0733	-.0346	-.1564	-.0350	-.1234	-.0043
	(492)	(490)	(493)	(479)	(481)	(501)	(501)	(501)	(501)
	P= .063	P= .072	P= .000	P= .109	P= .448	P= .000	P= .435	P= .006	P= .924
PC_STACH	-.0274	.0234	.0262	-.0584	.0287	-.2095	-.1460	-.0305	.0954
	(490)	(488)	(491)	(478)	(480)	(506)	(504)	(507)	(506)
	P= .546	P= .605	P= .562	P= .202	P= .531	P= .000	P= .001	P= .493	P= .032

	PC_PEER	PC_PRNT	PC_RELIG	PC_SES	PC_SLFES	PC_STACH	S_ASSERT	S_DICISI	S_GOALOR
BO_INTEN	-.1538	.1166	.3797	-.1155	-.0839	-.0274	.3491	.0694	-.1733
	(492)	(492)	(491)	(491)	(492)	(490)	(492)	(492)	(492)
	P= .001	P= .010	P= .000	P= .010	P= .063	P= .546	P= .000	P= .124	P= .000
BO_SEXAT	.2340	-.0269	-.4270	.0403	.0815	.0234	-.0240	.0845	.2035
	(490)	(490)	(489)	(489)	(490)	(488)	(490)	(490)	(490)
	P= .000	P= .553	P= .000	P= .374	P= .072	P= .605	P= .596	P= .062	P= .000
BO_SLFEF	.1775	.1931	.0607	.0142	.1849	.0262	.3199	.1870	.1969
	(493)	(493)	(492)	(492)	(493)	(491)	(493)	(493)	(493)
	P= .000	P= .000	P= .179	P= .753	P= .000	P= .562	P= .000	P= .000	P= .000
E_LOCUS	.0482	.0139	.0780	-.0048	.0733	-.0584	.1726	.1117	.0799
	(479)	(479)	(480)	(479)	(479)	(478)	(480)	(480)	(479)
	P= .292	P= .762	P= .088	P= .916	P= .109	P= .202	P= .000	P= .014	P= .080
E_SUBST	-.1992	.0432	.2369	-.1895	-.0346	.0287	.4634	.0913	-.0901
	(481)	(481)	(481)	(481)	(481)	(480)	(482)	(482)	(481)
	P= .000	P= .345	P= .000	P= .000	P= .448	P= .531	P= .000	P= .045	P= .048
K_PREVEN	-.1511	.0210	.1171	-.0882	-.1564	-.2095	.0831	-.0538	-.1695
	(500)	(500)	(507)	(507)	(501)	(506)	(506)	(506)	(501)
	P= .001	P= .639	P= .008	P= .047	P= .000	P= .000	P= .062	P= .227	P= .000
K_STD	-.1055	.0355	.0285	-.0371	-.0350	-.1460	.0324	-.0734	-.1062

- - Correlation Coefficients - -

	BO_INTEN	BO_SEXAT	BO_SLFEF	E_LOCUS	E_SUBST	K_PREVEN	K_STD	K_SYMP	K_TRANS
S_DICISI	.0694	.0845	.1870	.1117	.0913	-.0538	-.0734	-.0217	-.0425
	(492)	(490)	(493)	(480)	(482)	(506)	(506)	(506)	(506)
	P= .124	P= .062	P= .000	P= .014	P= .045	P= .227	P= .099	P= .626	P= .340
S_GOALOR	-.1733	.2035	.1969	.0799	-.0901	-.1695	-.1062	-.1090	-.0036
	(492)	(490)	(493)	(479)	(481)	(501)	(501)	(501)	(501)
	P= .000	P= .000	P= .000	P= .080	P= .048	P= .000	P= .017	P= .015	P= .936
SB_BEHAV	.4625	-.3602	.1418	.0767	.5024	.2068	.1638	.0462	-.0655
	(469)	(469)	(469)	(473)	(473)	(470)	(470)	(470)	(470)
	P= .000	P= .000	P= .002	P= .096	P= .000	P= .000	P= .000	P= .317	P= .156
SB_CNDOM	-.2286	.1508	-.0313	-.0511	-.0933	-.0196	-.0153	.0320	.0371
	(390)	(390)	(390)	(393)	(393)	(390)	(390)	(390)	(390)
	P= .000	P= .003	P= .538	P= .312	P= .065	P= .699	P= .763	P= .529	P= .465
SC_CNDOM	-.0172	.1779	.2218	-.0428	.0315	-.0770	-.0638	-.0331	-.0765
	(492)	(490)	(493)	(480)	(482)	(500)	(500)	(500)	(500)
	P= .704	P= .000	P= .000	P= .349	P= .490	P= .085	P= .155	P= .461	P= .088
SC_PEERN	.3195	.0510	.3775	.1113	.2696	-.0281	-.0082	-.0888	-.0435
	(492)	(490)	(493)	(479)	(481)	(499)	(499)	(499)	(499)
	P= .000	P= .260	P= .000	P= .015	P= .000	P= .532	P= .855	P= .047	P= .332
SC_PRNT	-.2818	.3416	.0212	-.0850	-.2757	-.1542	-.1039	-.0212	.0483
	(492)	(490)	(492)	(474)	(476)	(494)	(494)	(494)	(494)
	P= .000	P= .000	P= .639	P= .064	P= .000	P= .001	P= .021	P= .639	P= .284
SC_RISK	-.0888	.0501	.0696	-.0375	-.0553	-.1141	-.0161	-.0454	.0940
	(492)	(490)	(493)	(479)	(481)	(500)	(500)	(500)	(500)
	P= .049	P= .268	P= .123	P= .413	P= .226	P= .011	P= .720	P= .311	P= .036

- - Correlation Coefficients - -

	PC_PEER	PC_PRNT	PC_RELIG	PC_SES	PC_SLFES	PC_STACH	S_ASSERT	S_DICISI	S_GOALOR
K_SYMP	-.1310	-.0683	-.0078	-.0791	-.1234	-.0305	-.0072	-.0217	-.1090
	(500)	(500)	(508)	(508)	(501)	(507)	(506)	(506)	(501)
	P= .003	P= .127	P= .861	P= .075	P= .006	P= .493	P= .871	P= .626	P= .015
K_TRANS	-.0572	-.1109	-.1026	-.0275	-.0043	.0954	-.0776	-.0425	-.0036
	(500)	(500)	(507)	(507)	(501)	(506)	(506)	(506)	(501)
	P= .201	P= .013	P= .021	P= .537	P= .924	P= .032	P= .081	P= .340	P= .936
PC_MNTLH	.5002	.3655	-.0159	.1031	.7480	.1220	.2042	.2420	.5118
	(504)	(504)	(503)	(503)	(504)	(502)	(504)	(504)	(504)
	P= .000	P= .000	P= .722	P= .021	P= .000	P= .006	P= .000	P= .000	P= .000
PC_PEER	1.0000	.3537	-.0275	.1287	.5066	.0419	.0931	.2910	.4058
	(504)	(504)	(503)	(503)	(504)	(502)	(504)	(504)	(504)
	P= .	P= .000	P= .539	P= .004	P= .000	P= .349	P= .037	P= .000	P= .000
PC_PRNT	.3537	1.0000	.0974	.2227	.2861	.0473	.1059	.0830	.1594
	(504)	(504)	(503)	(503)	(504)	(502)	(504)	(504)	(504)
	P= .000	P= .	P= .029	P= .000	P= .000	P= .290	P= .017	P= .063	P= .000
PC_RELIG	-.0275	.0974	1.0000	.0360	-.0825	-.0067	.0823	.0422	-.1395
	(503)	(503)	(513)	(512)	(504)	(511)	(509)	(509)	(504)
	P= .539	P= .029	P= .	P= .417	P= .064	P= .880	P= .064	P= .342	P= .002
PC_SES	.1287	.2227	.0360	1.0000	.1148	.0994	-.0545	.0291	.1031
	(503)	(503)	(512)	(513)	(504)	(511)	(509)	(509)	(504)
	P= .004	P= .000	P= .417	P= .	P= .010	P= .025	P= .219	P= .513	P= .021
PC_SLFES	.5066	.2861	-.0825	.1148	1.0000	.1562	.1845	.2022	.6174
	(504)	(504)	(504)	(504)	(505)	(503)	(505)	(505)	(505)
	P= .000	P= .000	P= .064	P= .010	P= .	P= .000	P= .000	P= .000	P= .000
PC_STACH	.0419	.0473	-.0067	.0994	.1562	1.0000	.0234	.0545	.1872
	(502)	(502)	(511)	(511)	(503)	(512)	(508)	(508)	(503)
	P= .349	P= .290	P= .880	P= .025	P= .000	P= .	P= .599	P= .220	P= .000
S_ASSERT	.0931	.1059	.0823	-.0545	.1845	.0234	1.0000	.3512	.1607
	(504)	(504)	(509)	(509)	(505)	(508)	(510)	(510)	(505)
	P= .037	P= .017	P= .064	P= .219	P= .000	P= .599	P= .	P= .000	P= .000
S_DICISI	.2910	.0830	.0422	.0291	.2022	.0545	.3512	1.0000	.3153
	(504)	(504)	(509)	(509)	(505)	(508)	(510)	(510)	(505)
	P= .000	P= .063	P= .342	P= .513	P= .000	P= .220	P= .000	P= .	P= .000
S_GOALOR	.4058	.1594	-.1395	.1031	.6174	.1872	.1607	.3153	1.0000
	(504)	(504)	(504)	(504)	(505)	(503)	(505)	(505)	(505)
	P= .000	P= .000	P= .002	P= .021	P= .000	P= .000	P= .000	P= .000	P= .
SB_BEHAV	-.2283	.0142	.2643	-.1046	-.1518	-.0795	.2090	-.0208	-.2338
	(472)	(472)	(473)	(472)	(472)	(471)	(473)	(473)	(472)
	P= .000	P= .759	P= .000	P= .023	P= .001	P= .085	P= .000	P= .653	P= .000
SB_CNDOM	.0384	.0381	-.0539	.0468	.0423	.0517	.0497	.0596	.1754
	(393)	(393)	(393)	(393)	(393)	(392)	(393)	(393)	(393)
	P= .448	P= .451	P= .287	P= .355	P= .403	P= .307	P= .326	P= .239	P= .000
SC_CNDOM	.1374	.0135	-.0461	-.0117	.0971	-.0694	.2621	.1591	.1367
	(502)	(502)	(502)	(502)	(502)	(501)	(503)	(503)	(502)
	P= .002	P= .763	P= .303	P= .794	P= .030	P= .121	P= .000	P= .000	P= .002
SC_PEERN	.2930	.2262	.0780	-.0944	.1828	-.0169	.4178	.3035	.2027
	(502)	(502)	(501)	(501)	(502)	(500)	(502)	(502)	(502)
	P= .000	P= .000	P= .081	P= .035	P= .000	P= .706	P= .000	P= .000	P= .000

(Coefficient / (Cases) / 2-tailed Significance) " . " is printed if a coefficient cannot be computed

	SB_CNDOM	SC_CNDOM	SC_PEERN	SC_PRNT	SC_RISK
BO_INTEN	-.2286	-.0172	.3195	-.2818	-.0888
	(390)	(492)	(492)	(492)	(492)
	P= .000	P= .704	P= .000	P= .000	P= .049
BO_SEXAT	.1508	.1779	.0510	.3416	.0501
	(390)	(490)	(490)	(490)	(490)
	P= .003	P= .000	P= .260	P= .000	P= .268
BO_SLFEF	-.0313	.2218	.3775	.0212	.0696
	(390)	(493)	(493)	(492)	(493)
	P= .538	P= .000	P= .000	P= .639	P= .123
E_LOCUS	-.0511	-.0428	.1113	-.0850	-.0375
	(393)	(480)	(479)	(474)	(479)
	P= .312	P= .349	P= .015	P= .064	P= .413
E_SUBST	-.0933	.0315	.2696	-.2757	-.0553
	(393)	(482)	(481)	(476)	(481)
	P= .065	P= .490	P= .000	P= .000	P= .226
K_PREVEN	-.0196	-.0770	-.0281	-.1542	-.1141
	(390)	(500)	(499)	(494)	(500)
	P= .699	P= .085	P= .532	P= .001	P= .011
K_STD	-.0153	-.0638	-.0082	-.1039	-.0161
	(390)	(500)	(499)	(494)	(500)
	P= .763	P= .155	P= .855	P= .021	P= .720
K_SYMP	.0320	-.0331	-.0888	-.0212	-.0454
	(390)	(500)	(499)	(494)	(500)
	P= .529	P= .461	P= .047	P= .639	P= .311
K_TRANS	.0371	-.0765	-.0435	.0483	.0940
	(390)	(500)	(499)	(494)	(500)
	P= .465	P= .088	P= .332	P= .284	P= .036
PC_MNTLH	.0258	.0990	.2521	.1748	.1367
	(393)	(502)	(502)	(494)	(504)
	P= .610	P= .027	P= .000	P= .000	P= .002
PC_PEER	.0384	.1374	.2930	.1841	.0885
	(393)	(502)	(502)	(494)	(504)
	P= .448	P= .002	P= .000	P= .000	P= .047
PC_PRNT	.0381	.0135	.2262	.1796	.0937
	(393)	(502)	(502)	(494)	(504)
	P= .451	P= .763	P= .000	P= .000	P= .035
PC_RELIG	-.0539	-.0461	.0780	-.4191	-.0319
	(393)	(502)	(501)	(493)	(503)
	P= .287	P= .303	P= .081	P= .000	P= .476
PC_SES	.0468	-.0117	-.0944	.0490	.0653

- - Correlation Coefficients - -

	SB_CNDOM	SC_CNDOM	SC_PEERN	SC_PRNT	SC_RISK
PC_SLFES	.0423	.0971	.1828	.2176	.1253
	(393)	(502)	(502)	(494)	(504)
	P= .403	P= .030	P= .000	P= .000	P= .005
PC_STACH	.0517	-.0694	-.0169	.0837	-.0079
	(392)	(501)	(500)	(492)	(502)
	P= .307	P= .121	P= .706	P= .064	P= .861
S_ASSERT	.0497	.2621	.4178	-.0939	-.0526
	(393)	(503)	(502)	(494)	(504)
	P= .326	P= .000	P= .000	P= .037	P= .239
S_DICISI	.0596	.1591	.3035	.0479	.0436
	(393)	(503)	(502)	(494)	(504)
	P= .239	P= .000	P= .000	P= .288	P= .329
S_GOALOR	.1754	.1367	.2027	.2688	.1827
	(393)	(502)	(502)	(494)	(504)
	P= .000	P= .002	P= .000	P= .000	P= .000
SB_BEHAV	-.2284	.0883	.1995	-.3508	-.1251
	(393)	(473)	(472)	(469)	(472)
	P= .000	P= .055	P= .000	P= .000	P= .006
SB_CNDOM	1.0000	.2831	-.0940	.1510	.0369
	(393)	(393)	(393)	(390)	(393)
	P= .	P= .000	P= .063	P= .003	P= .465
SC_CNDOM	.2831	1.0000	.3497	.0020	.0228
	(393)	(503)	(502)	(494)	(502)
	P= .000	P= .	P= .000	P= .965	P= .610
SC_PEERN	-.0940	.3497	1.0000	-.0624	.0453
	(393)	(502)	(502)	(494)	(502)
	P= .063	P= .000	P= .	P= .166	P= .311
SC_PRNT	.1510	.0020	-.0624	1.0000	.0725
	(390)	(494)	(494)	(494)	(494)
	P= .003	P= .965	P= .166	P= .	P= .108
SC_RISK	.0369	.0228	.0453	.0725	1.0000
	(393)	(502)	(502)	(494)	(504)
	P= .465	P= .610	P= .311	P= .108	P= .

APPENDIX D

STUDENT SEXUAL BEHAVIOUR SURVEY

The Student Sexual Behaviour Survey is available by contacting Dr. Maryanne Poirier, Assistant Professor in the Department of Human Ecology, University of Alberta at (403) 492-3922 or Dr. Brenda Munro, Associate Professor in the Department of Human Ecology, University of Alberta, at (403) 492-4528.